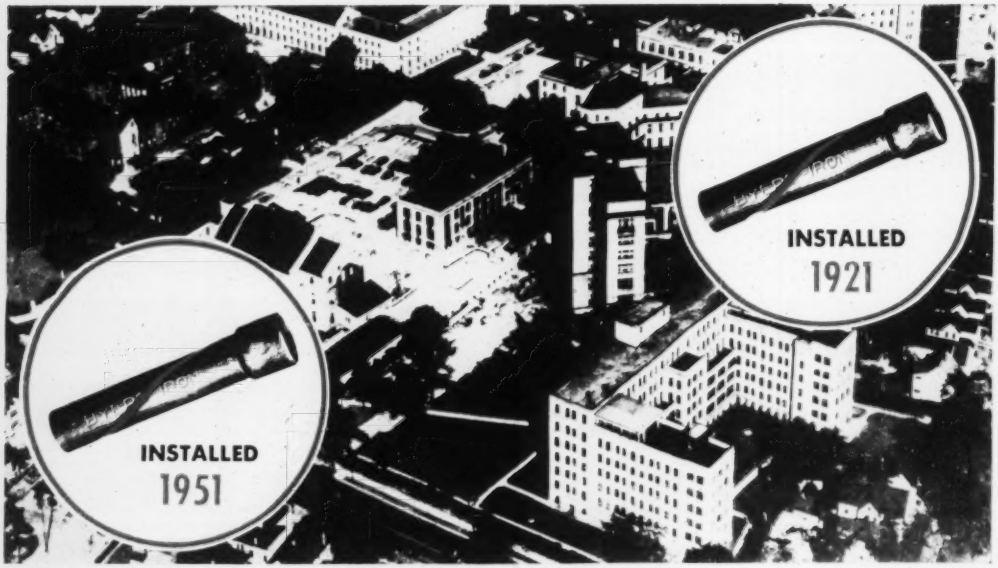
ENGINEERING NEWS-RECORD

A McGRAW-HILL PUBLICATION



IN CLEVELAND'S CITY HOSPITAL . . .

30 MAINTENANCE-FREE YEARS RECOMMENDED

Byers Wrought Iron Pipe FOR RETURN LINES

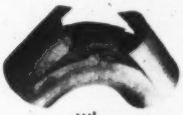
When engineers of the City Hospital, Cleveland, Ohio, made plans to replace the genuine wrought iron return lines in the hospital's boiler room, they had the best possible support for selecting the same material for the replacement piping. The old genuine wrought iron lines had served for 30 maintenance-free years.

There is no substitute for experience as a guide in selecting pipe for corrosive services. The City Hospital engineers, like engineers in every part of the country, have found that when corrosion is a threat to durability, genuine wrought iron can be counted on to combat the condition effectively, and serve longer at lower cost per year. In many reported cases, this time-tested material has doubled, tripled and even quadrupled the useful life previously obtained from low-first-cost piping, and ended maintenance headaches that had been regarded as incurable.

• • •

If you are concerned today with the construction, replacement, or repair of any boiler plant services, you will find some helpful information in our bulletin, WROUGHT IRON FOR PIPING SYSTEMS. We'll be happy to send you a copy on request.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, San Francisco. Export Division: New York, N. Y.



Why Genuine Wrought Iron Lasts

This notch-fracture test specimen illustrates the unique fibrous structure of genuine wrought iron—which is responsible for the high corrosion resistance of the material. Tiny threads of glass-like silicate slag, distributed through the body of high-purity iron, halt and disperse corrosive attack, and discourage pitting and penetration. They also anchor the initial protective scale, which shields the underlying material.

BYERS

CORROSION COSTS YOU MORE THAN WROUGHT IRON

WROUGHT IRON

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ELECTRIC FURNACE QUALITY ALLOY AND STAINLESS STEEL PRODUCTS

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Handles 3 Times the Tonnage in Mining Mineral

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Improved type, designed by the G.T.M.—Goodyear Technical Man—served 18 months—handled 6,480,000 cubic yards of clay matrix.

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ENGINEERING NEWS-RECORD

ABP Member ABC

Volume 147 NOVEMBER 22, 1951 No. 21

WALDO G. BOWMAN
Editor

FEATURES IN THIS ISSUE

Renaissance on the Rhone.....Waldo G. Bowman 30
Storm aids harbor completion..... 36
Congress holds key to more Niagara power..... 39
Clean streams board hits mine acids..... 40
Perspective— 104

DEPARTMENTS

Construction Week	17	Men and Jobs	57
Construction Trend	19	Education, Research	58
Editorials	21	Meetings	61
News of the Week	23	Obituaries	63
Book Reviews	43	Labor	64
Reader Comment	45	Construction Business	66
Municipal	47	Unit Prices	68
International	50	Construction Reports	70

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TODAY'S job you know about—but, what are you going to hit tomorrow? Perhaps it will be easier digging but perhaps you'll hit rock you didn't expect. If you have a *real* Rock Shovel—a Northwest Rock Shovel—you are ready for any problem. It means real output in rock, and *greater* output in the easy digging. You are ready for any problem from a quarry job to ripping up pavement.

Northwests are built for the tough jobs. Cast Steel Bases and Cast Steel Machinery Side Frames give a foundation that stands the beating of tough "going." The Northwest Dual Independent Crowd utilizes force most other independent crowd shovels waste. The "Feather-Touch" Clutch Control makes handling the big ones easy. Uniform Pressure Swing Clutches give a smooth swing and reduce spotting delays. The Cushion Clutch reduces overloads on parts under power and Northwest Steering reduces maneuvering in changing location. These are real Rock Shovel advantages that mean money. A Good Shovel is Good in *Any* Digging!

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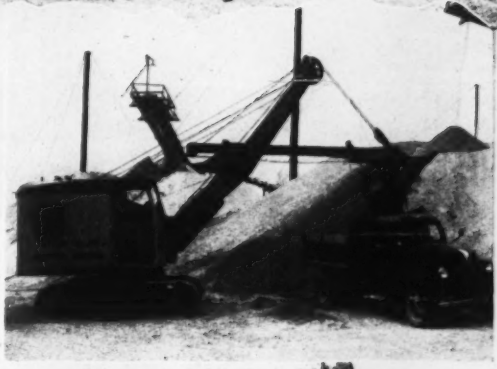


NORTHWEST

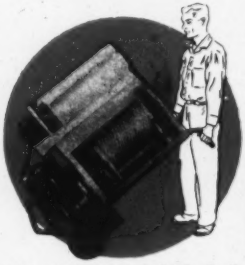
CRAWLER and TRUCK MOUNTED SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

outside- a frigid 28° below

but WORK GOES ON IN A COMFORTABLE 65° ABOVE!

Thanks to Silent Glow Portable Heaters, work on this housing project in St. Paul was completed on schedule last winter in spite of sub-zero temperatures.

This winter, the scene will be repeated on construction jobs from coast to coast where Silent Glow units will be effectively used to dry plaster, keep concrete from freezing, thaw frozen machinery, and to provide more comfortable working conditions.



Model RF Silent Glow Portable Heater provides two kinds of heat . . . radiant . . . forced air by means of auxiliary fan. Delivers 168,000 BTU per hour. Other Silent Glow models deliver up to 350,000 BTU per hour.

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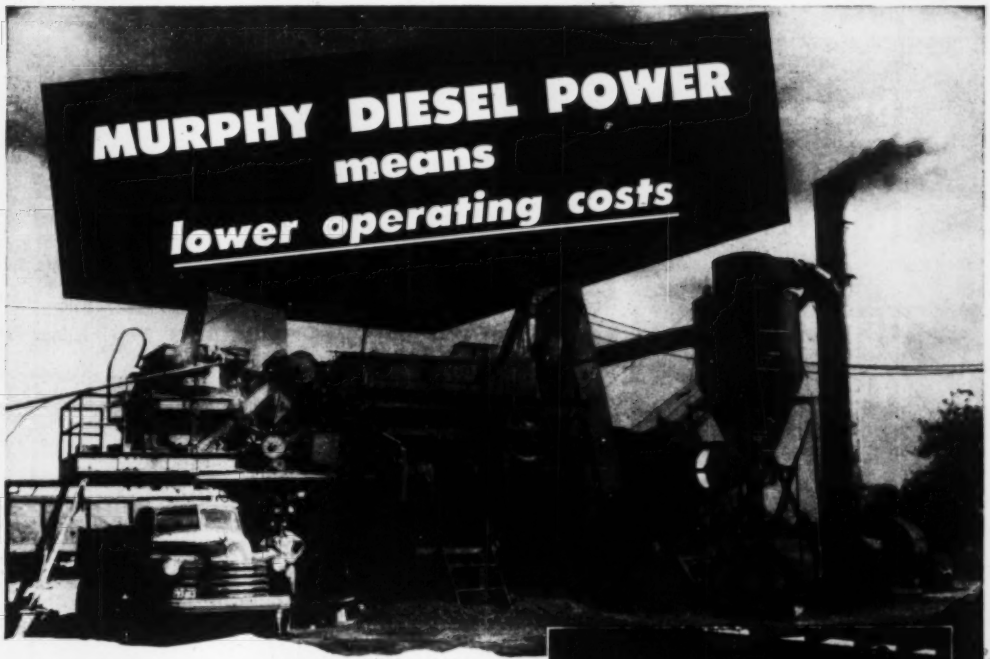
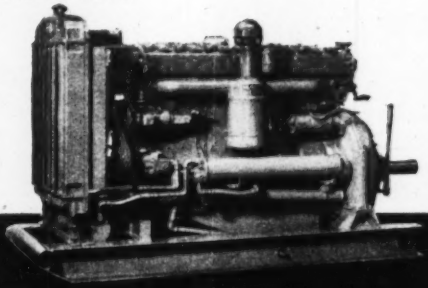


MURPHY DIESEL'S ability to deliver more power . . . greater dependability . . . greater economy . . . and longer engine life means bigger profits for you on any kind of a job. Whether it's a crushing plant, a pump, a shovel, an air compressor, a hoist or a hot mix plant like the one shown above, Murphy Diesel Power will enable you to get the most out of your equipment.

Full details on why Murphy Diesels are able to give you all these operating advantages are given in the booklet "*10 Questions to Ask a Diesel Engine Salesman*". Ask your Murphy Diesel Dealer for a copy or write direct.

Shown above is a Cedarapids hot mix plant owned by Charles G. Gilmore Asphalt Products, Anna, Illinois. Electric power for the plant is supplied by the six cylinder Murphy Diesel Generator Set shown in the inset. When photographed the plant was being used in connection with paving U.S. 61 between Portageville and New Madrid, Missouri.



Heavy Duty Power for construction

Murphy Diesel Engines and Power Units for construction, 90 to 226 H.P., 1200 and 1400 RPM. Generator Sets, 60 to 140 K.W.

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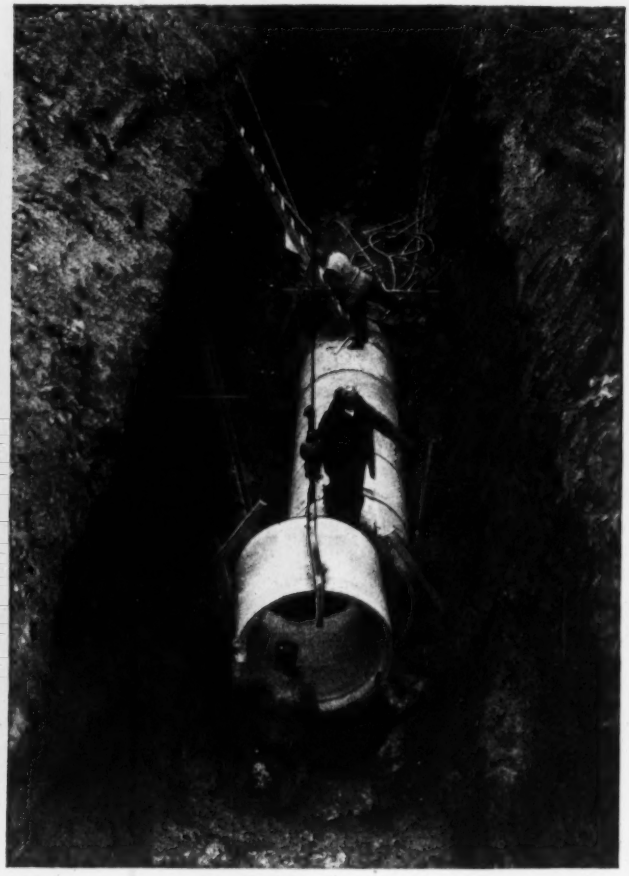
There's no satisfactory substitute for VITRIFIED CLAY PIPE or CONCRETE PIPE

on the jobs to which each is adapted



There's no satisfactory substitute for Universal Sewer—U.S. Concrete Pipe, for each has "in-the-ditch" advantages that make for ultimate economy in a successful installation.

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What's behind the Euclid name?

Engineered...for the Job

Of simple design and rugged construction, Euclids are engineered and built specifically for moving earth, rock, coal and ore in off-the-highway service.

There is a Euclid model to meet every requirement in off-the-highway work, and body designs for all types of materials. Capacities of Rear-Dump "Eucs" range from 10 to 34 tons, with diesel engines of 125 to 400 h.p. Top speeds with full payload up to 35.7 m.p.h. . . . semi-rigid or spring mounted drive axle, five or 10 speed transmission.

Bottom-Dump Euclids range in capacity from 13 to 25 cu. yds., have diesel engines of 190 to 300 h.p. . . . top speeds loaded up to 34.4 m.p.h.

Also job proved for high production at low cost are the Euclid Loader and the Euclid Scraper. Write for complete information on the Euclid line of earth moving equipment or call your distributor.

The EUCLID ROAD MACHINERY Co.
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MORE LOADS PER HOUR—
MORE PROFIT PER LOAD

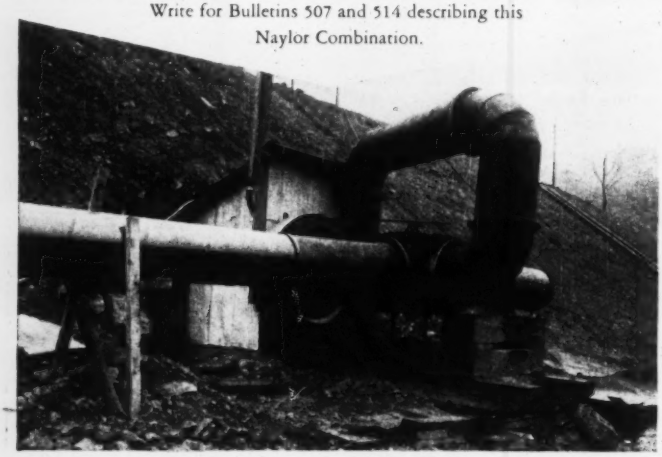
EUCLIDS *Move the Earth*

HOW TO PROVIDE
FRESH AIR For Underground Construction

Contractors have found the practical answer in the combination of Naylor Pipe and Naylor Wedge-Lock Couplings.

Air lines can be installed quickly with this dependable lightweight pipe and these one-piece, positive-type couplings that provide the fastest possible connections, even in limited space. Though light in weight, Naylor Pipe has the extra collapse strength, due to its exclusive Lockseam Spiralweld structure, to do double duty in push-pull ventilating service. Thus, Naylor lines supply fresh air as well as exhaust dangerous fumes.

Write for Bulletins 507 and 514 describing this Naylor Combination.



NAYLOR PIPE

Naylor Pipe Company, 1248 E. 92nd St., Chicago 19, Ill.
New York Office, 350 Madison Avenue, New York 17, N.Y.

NEWS BRIEFS

Steel the hard way

It's a long way around to get steel, but it works.

The Utah Construction Co. of San Francisco, through its subsidiary the Argonaut Co., has spent $3 million developing iron ore deposits at Quinsam Lake on Vancouver Island and improving shipping facilities there. Argonaut started shipping ore in August in 10,000-ton lots to Japanese steel mills.

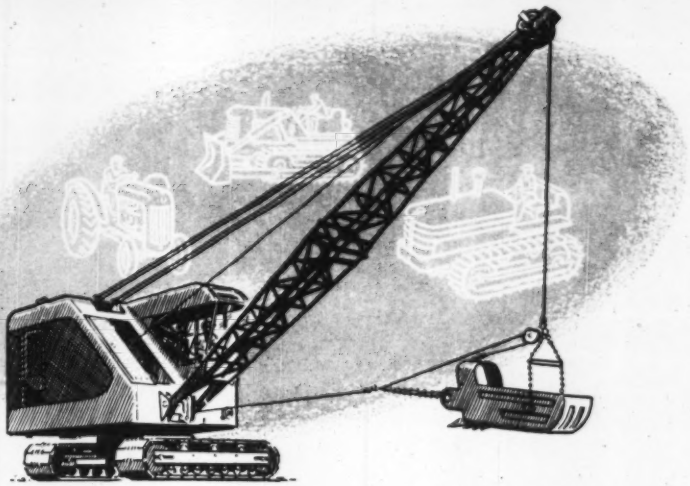
Now the Japanese mills are shipping back steel plate. First cargo, 7,000 tons arrived at Vancouver recently, consigned to Overseas Commodities, Ltd. and slated for use in the Alberta oil fields and by engineering firms.

• **The good old days**—Here's something in the way of low construction costs on Cape Cod back in 1831: "To Thomas Matthews or the school agent for District No. 1 in the town of Dennis: You are hereby directed to provide a schoolhouse, and a school teacher as soon as may be. And continue such school until the expense of the same amounts to the sum of $13.41. We herewith deliver you orders on the treasurer of said town for the same, Signed—Jona Nickerson, Oren Howes, and Thatcher Clark, selectmen of Dennis."

It takes a lot of scrap to make steel—How about yours?

• **Phones for 25,000 new homes**—The Bell Telephone Co. of Pennsylvania has started a $4,750,000 expansion project to provide additional telephone service in lower Bucks County. William M. Houldin, district manager for the company, said the project was made necessary by the location in the county of the Fairless Works of U. S. Steel and the construction of an estimated 25,000 new homes. The bulk of the new homes are being constructed in Bristol and Falls townships by the Danherst Corporation of Cleveland, Ohio, and William D. Levitt & Sons of New York City. In order to conserve copper and other scarce materials, the company is planning to use "N-carrier" equipment, which permits 12 telephone calls to go on a single pair of wires. Houldin said there are already 4,000 new potential subscribers living in the area

(Continued on page 12)



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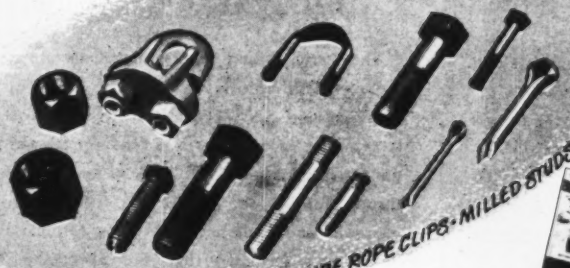
When the going's rough and rugged, you need the extra strength and quality of Lamson heavy-duty fasteners.

Many manufacturers of heavy road-building, agricultural and earth-moving machinery use Lamson fasteners as original equipment. What better guarantee could you have that Lamson fasteners are your *best bet* for repair and replacement use?



HI-NUTS · U-BOLTS · 1035 CAP AND SET SCREWS · WIRE ROPE CLIPS · MILLED STUDS · COTTERS · TRACTOR BOLTS

Send for this Handy Reference Brochure on Heavy Machinery Fasteners Today!

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BOLTS • NUTS • SCREWS • COTTERS • STUDS • RIVETS • SPECIALS • SCREW MACHINE PRODUCTS

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LAMSON LOCK NUTS: Economical, vibration-proof. Can be re-used repeatedly.

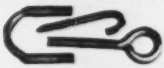
"1035" SET SCREWS: Cup point type, hardened, heat-treated.

COTTER PINS: Steel, Brass, Aluminum and Stainless Steel.

TRACTOR BOLTS: Made to manufacturers' standards.

"1035" CAP SCREWS: Hi-Tensile heat-treated steel.

MILLED STUDS: Concentric, accurate, in a full range of sizes.



"BENT" BOLTS: Including U Bolts, Eye Bolts, Hook Bolts, etc.

Wire Rope Clips: Hi-Center saddles, extra-strength U Bolts.

PIPE PLUGS: Forged Steel, heat-treated.

FOR MORE INFORMATION ON LAMSON *Money-Saver* FASTENERS . . . . . CHECK COUPON and CLIP THIS STRIP

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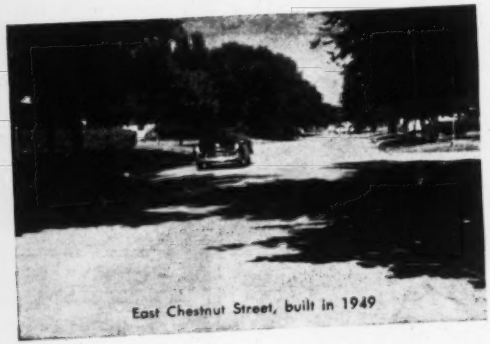


East Chestnut Street, built in 1949

Poplar Street, built in 1950

In Enid, Oklahoma, the "people's choice" in pavements is *CONCRETE*

Monroe Street, built in 1949

South Wallace Drive, built in 1949

Rush Street, built in 1950

Under the Oklahoma State Paving Law property owners have the right to request the type of pavement they prefer by filing a petition with the city clerk. If 51 per cent or more of the property owners in a paving district petition for a specific pavement, it becomes mandatory for the city to specify that type of pavement.

In the two years, 1949 and 1950, the city of Enid, Oklahoma, awarded contracts for 224,494 sq. yd. of concrete streets. This constituted the total amount of awards for new pavement during this two-year period. In every paving district where a majority of property owners expressed a preference the choice was concrete.

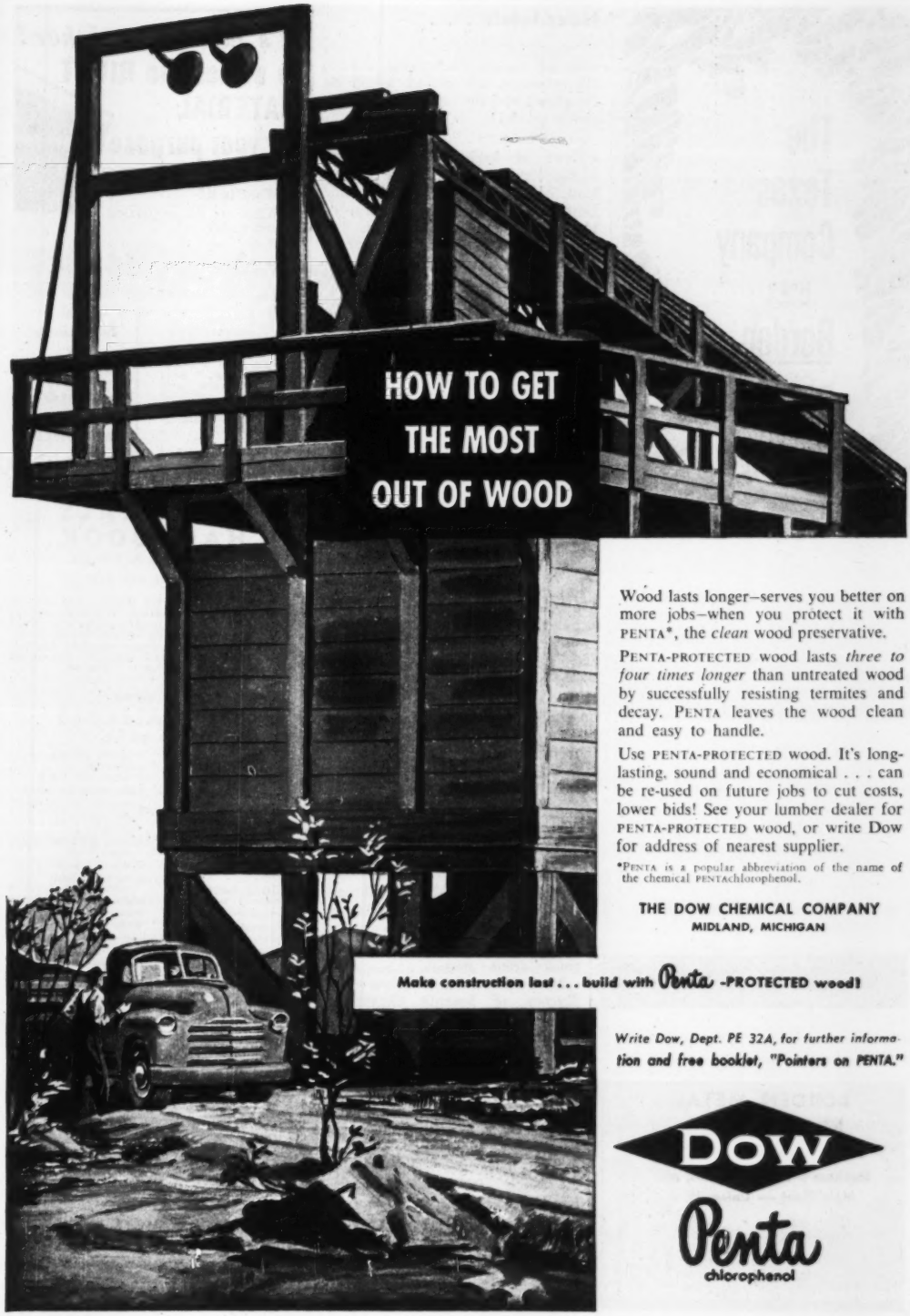
The overwhelming preference for concrete among property owners in Enid is echoed and re-echoed by motorists, taxpayers and city officials from coast to coast. Concrete is moderate in first cost, yet can be designed accurately for any axle load—and will *keep* its load-carrying capacity throughout its long service life. It costs much less to maintain and it lasts longer. The result is true ***low-annual-cost*** pavement that pleases property owners, city officials and motorists alike.

For more information about the designing and building durable, ***low-annual-cost*** pavements, write for free booklet, *"Design of Concrete Pavements for Municipal Streets."* It is distributed only in the United States and Canada.

PORTLAND CEMENT ASSOCIATION

Dept. A11d-17, 33 W. Grand Ave., Chicago 10, Ill.

A national organization to improve and extend the uses of portland cement and concrete... through scientific research and engineering field work



Wood lasts longer—serves you better on more jobs—when you protect it with PENTA*, the *clean* wood preservative.

PENTA-PROTECTED wood lasts *three to four times longer* than untreated wood by successfully resisting termites and decay. PENTA leaves the wood clean and easy to handle.

Use PENTA-PROTECTED wood. It's long-lasting, sound and economical . . . can be re-used on future jobs to cut costs, lower bids! See your lumber dealer for PENTA-PROTECTED wood, or write Dow for address of nearest supplier.

*PENTA is a popular abbreviation of the name of the chemical PENTAchlorophenol.

THE DOW CHEMICAL COMPANY
MIDLAND, MICHIGAN

Make construction last . . . build with Penta -PROTECTED wood!

Write Dow, Dept. PE 32A, for further information and free booklet, "Pointers on PENTA."

DOW
Penta
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- most substantial and oldest design
- permits perfect distribution of loads
- excellent for rolling loads and walking

BORDEN METAL PRODUCTS CO.
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Southern Division — Leeds, Ala.
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News briefs . . .

who are awaiting telephone service. He estimated the project would be completed and the new telephones in service by 1953.

• **News of bridges**—Plans for the $7,000,000 Fore River bridge at Portland, Me., will be completed by the Boston, Mass., engineering firm of Fay, Spofford and Thorndike. An office has been opened in Portland where the bridge and the approaches will be designed. Highway Director T. J. Kauer of Ohio reports 194 bridge failures on the state system in 1949 and 1950. He said illegal truck loads caused the cave-in of 25 bridges and were a contributing factor in the failure of 129. Wayne County, Ind., is remodeling and rebuilding bridges. Engineers make periodic inspection so that repairs can be made before bridges are too far gone. A 245-ft steel bridge at Nolan's Fork, built in 1914, was repaired for $18,000 while it is said that a new bridge there would have cost ten times that amount.

Work on the approach to the Mormon Pioneer Memorial bridge in Omaha, Neb., was tied up recently because of $15,000 damages to construction equipment by vandals. Holes were punched in radiators, tires were slashed, a crane was put out of commission, also three earth-moving machines, an air compressor, a scoop-mobile and a diesel tractor. It was not immediately apparent what had annoyed the vandals.

The cover

With $11.2 million now available, Commissioner Pere F. Seward and Housing and Home Finance Administrator Raymond M. Foley get together on plans for building community facilities for defense areas.

Most of the work will be done under direction of Seward's Community Facilities and Special Operations Service, which will cooperate in the work with the Federal Security Agency. SFA is charged, under recently-signed Public Law 139, with building certain types of service facilities such as sewage treatment and water filtration plants, recreational projects and child care centers.

Acting under another provision of the same law, HHFA has programmed (up to last week) 48,500 dwellings to be built in 69 critical defense housing areas—through extension of credit, and federally-built housing where private work is not available.

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ENGINEERS
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MATERIALS HANDBOOK
By GEORGE S. BRADY
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Use this handbook for preliminary survey when you need materials. Easy to consult; written as non-technically as feasible. Gives the most helpful facts on kinds, characteristics, comparative data, sources, substitutes, adulterants, and uses for thousands of natural and synthetic materials.

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Abrasives	Industrial and Plating Chemicals
Aircraft Metals	Iron and Iron Alloys
Bearing Metals	Light Metals and Alloys
Brasses, Bronzes	Lubricants, Oils, Greases
Building Materials	Metal Groups
Corrosion-resistant Alloys	Minerals
Cupro-nickel Alloys	Molding Materials, Resins, Gums, Waxes
Fabrics, Leathers, Organic Materials	Ores of the Metals
Fibers	Refractories, Heat Insulators
Finishing Materials, Pigments, Solvents	Steels and Tool Materials
Foundry Materials	Woods
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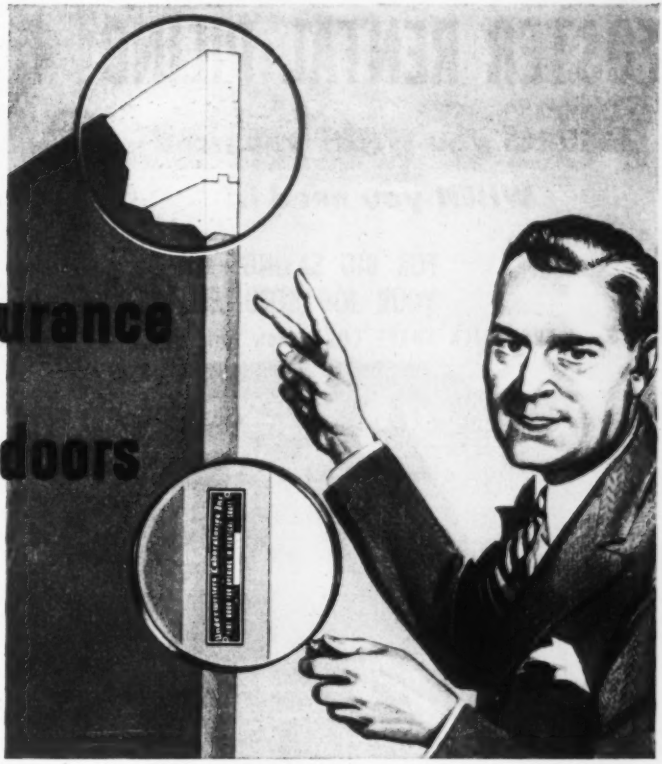

EIGHT PROMINENT COMPANIES OFFER NEW TYPE FIREDOORS

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1927 Elmwood Ave., Buffalo 7, N.Y.
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"OVERLY" (Metal Face)

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"CALMETAL" (Metal Face)

Guilbert, Incorporated
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"KAYLO" (Wood Veneer Face)

Eight manufacturers now offer firedoors approved by Underwriters' Laboratories and containing the material which has revolutionized the industry—Kaylo hydrous calcium silicate.

Underwriters' Laboratories, Inc. is a recognized authority on what constitutes proper fire protection. Their approval of a product is assurance of protection.

Kaylo calcium silicate is a lightweight, incombustible chemical compound (not glass). Used as the solid core of firedoors with either metal or wood veneer facings, it provides not only a barrier to flames, but a retardant to heat unequalled by core materials used in conventional firedoors. Its insulating value protects life as well as property.

Kaylo-core metal doors also save steel. They require up to 60% less than so-called hollow metal firedoors. The Kaylo core is insoluble in water, does not warp, swell or shrink, resists rot and vermin.

When buying or specifying firedoors for hotels, hospitals, schools, offices, factories, or any location where fire protection is needed—look to the eight manufacturers who give you *double* assurance of the *best*.

For details about Kaylo-core doors, write the manufacturers listed.

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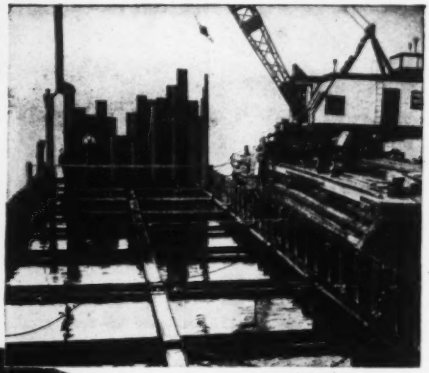
ASSURES you WHAT you need—

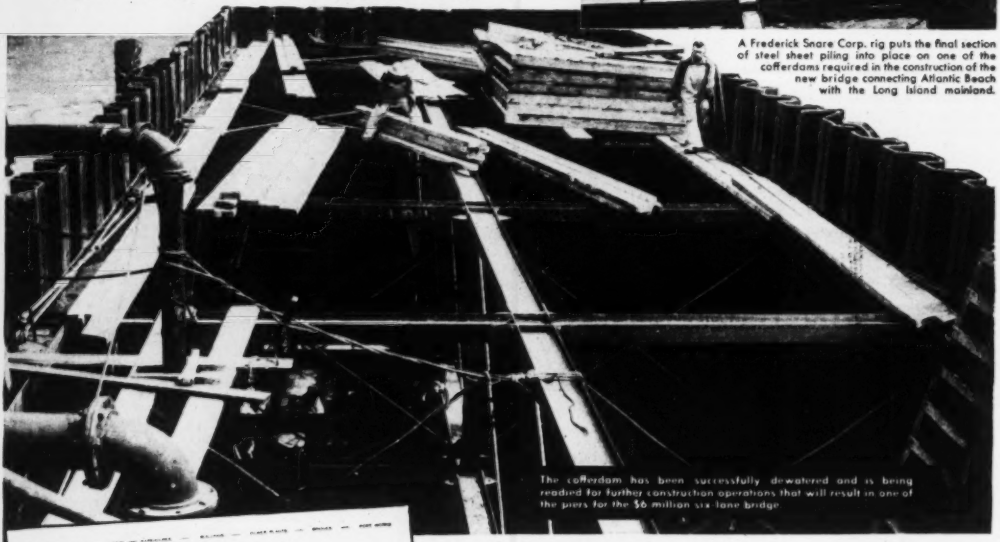
WHEN you need it!

FOR BIG SAVINGS ON YOUR JOB REQUIREMENTS

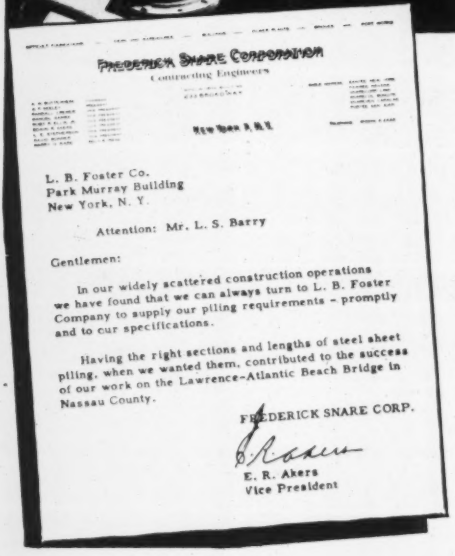
Says: FREDERICK SNARE CORP., New York, N. Y.



A Frederick Snare Corp. rig puts the final section of steel sheet piling into place on one of the cofferdams required in the construction of the new bridge connecting Atlantic Beach with the Long Island mainland.



The cofferdam has been successfully dewatered and is being readied for further construction operations that will result in one of the piers for the $6 million six-lane bridge



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Attention: Mr. L. S. Barry

Gentlemen:

In our widely scattered construction operations we have found that we can always turn to L. B. Foster Company to supply our piling requirements – promptly and to our specifications.

Having the right sections and lengths of steel sheet piling, when we wanted them, contributed to the success of our work on the Lawrence-Atlantic Beach Bridge in Nassau County.

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On a complex and difficult job—the contractor knew he needed the exact lengths and exact sections of steel sheet piling to accomplish the job economically. Frederick Snare Corporation needed, promptly, a quantity of 60 ft. lengths of ZP-27 sections for construction of a cofferdam used in the pier construction of the new Lawrence-Atlantic Beach Bridge, Nassau County, New York. They turned to the one largest, most reliable source—L. B. Foster Company, and got exactly what was needed to complete the job on time.

No need too small or too large—no requirement too difficult for the L. B. Foster Company—specialists in every phase of piling rental service. Five nation-wide warehouses plus numerous field stockpiles assure you of receiving, *on time*, the proper lengths and sections your job requires. Foster's standard low rental rates give you a low fixed cost basis when bidding on jobs. Also rent pile hammers and pile extractors.

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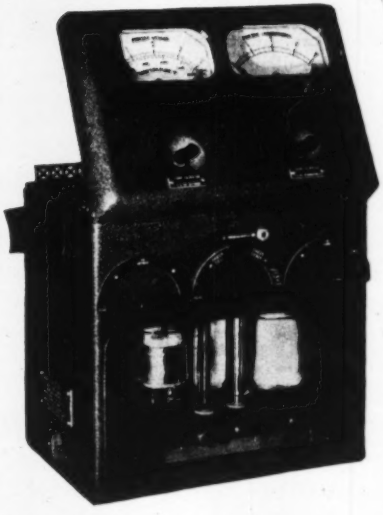
You'll see profit in applying the Cities Service Heat Prover . . . *not an instrument you buy, but a service we supply!* Call or write your local Cities Service office about arrangements. Or simply return the coupon today.



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QUALITY PETROLEUM PRODUCTS

"Let the shovel go . . . but hang on to that DIPPER"

When the preference for an Amsco Dipper is so strong that a superintendent at one of Minnesota's largest iron mines quietly removes it from a shovel being shipped to another mine, there are apt to be some good performance reasons why!

The superintendent reported that this AMSCO 6½ yard renewable lip dipper *loaded a record number of tons per 8 hour shift*—more than had ever been loaded before. And, where other dippers needed repairs every 2 months or so, it is still going strong after 6 months of service with no repairs of any kind!

Better design and construction are the reasons for this high production and longer, uninterrupted service. The wide mouth and shallow depth permit faster, easier digging and loading, and a 4-way taper insures clean dumping every time.

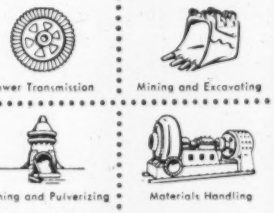
And, this dipper is *all-cast*—of tough, work-hardening AMSCO Manganese Steel. The renewable lip and heel plate, when finally worn, are replaceable in a matter of minutes.

Dippers can—and should be—bought with an eye to higher digging efficiency and lower costs per ton . . . and the moral of this actual on-the-job example is clear . . .

WHEREVER YOU MEET A PROBLEM OF WEAR CAUSED BY IMPACT AND/OR ABRASION . . .

. . . find out about longer-lasting, dollar-saving Manganese Steel Dippers made by AMSCO . . . world's largest producer of manganese steel castings for all industry.

AMSCO controls impact and abrasive wear in 5 basic industrial operations:



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THE CONSTRUCTION WEEK

NOW OR NEVER!—An extension of two months—the last one it will get according to the National Production Authority—was given the New England Steel Development Corp. to start construction of a $228 million steel plant in Connecticut. NPA approved an application of the wholly-owned subsidiary of the New England Council—a non-profit regional promotion organization—for extension of its certificate of necessity permitting rapid amortization for the project. Prospects of meeting deadline appear remote.

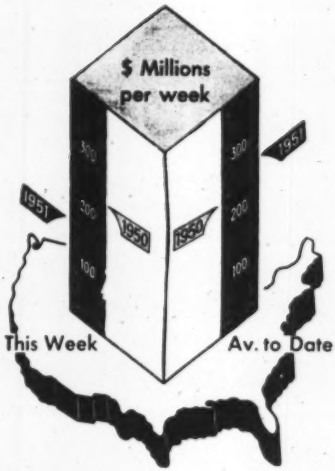
BRICK FOR STEEL—The Structural Clay Products Institute has launched a program to promote use of brick and structural tile in place of critical metals. Load bearing brick or tile walls can be used to eliminate entirely the use of structural steel in buildings of three stories or less, according to C. Forrest Tefft, President of the Institute keynoting a special issue of "Technical Notes on Brick and Tile Construction" describing techniques for substitution.

MILITARY CONSTRUCTION — Congress has appropriated two-thirds of the cash needed for military public works construction in the recent defense build-up. So far, $6.4 billion has been voted, including the $3.9-billion appropriation approved last month for the current fiscal year. Looking ahead, that leaves about $3.2 billion to be requested for military construction in the next fiscal year—starting July 1, 1952—to complete the program.

BUILDING RELIEF—YEAR AWAY—Relief for construction men in non-defense areas like New York is nine months to a year away, according to Joseph D. Keenan, secretary-treasurer of the AFL building trades and labor advisor to DPA. Speaking "off the cuff" to much worried N. Y. Building Congress members (who have deplored controls, pointed to dropping employment) Keenan pointed out there's little chance of getting steel for schools and needed public buildings for about nine months, for commercial building for about a year. No pussyfooter, Keenan said DPA is well aware of the situation in the metropolis, but "there isn't enough steel" to go around except for a few small jobs here and there.

STRESSING PRESTRESSED—More than 300 engineers attending an all-day conference on prestressed concrete in Albany, N. Y., last week heard Bertram D. Tallamy—superintendent of the New York State Department of Public Works and president of the American Association of State Highway Officials—urge use of prestressed concrete to alleviate the shortage of structural steel. Cited in discussion was a school building using prestressed beams that required less than 10% of the steel for rolled steel beams and less than 20% of the steel for reinforced concrete beams . . . concrete requirements were reduced one-third. Sponsor for the meeting was the Mohawk-Hudson section of ASCE.

ENGINEERS WANTED—Rhode Island's Public Works Department has asked State budget makers for $157,000 a year to hire 56 additional engineers and aides to supervise construction of the seven-year freeways and highway program. It bases its request on a suggestion from the Bureau of Public Roads that it will no longer foot the bill for private consultants—Charles A. Maguire & Associates on the $8.5 million Olneyville expressway, for example—as supervising engineers on the State's behalf.



Contracts by type of work

	This Week	Cumulative 47 wks 1951	1950	% chge
Waterworks	$4.2	$187.2	$199.7	−6
Sewerage	4.3	307.4	257.7	+19
Bridges	2.0	289.0	341.5	−15
Highways	17.3	1,081.4	1,143.0	−5
Earthwork, Waterways	3.9	462.5	375.4	+23
Buildings:				
Public	32.5	1,955.8	1,519.5	+29
Housg., pub.	1.9	563.8	291.8	+103
Housg., priv.	47.3	1,831.4	2,947.1	−38
Commercial	8.9	564.9	889.4	−36
Industrial	27.3	3,810.4	1,481.4	+157
Unclassified	13.5	1,513.0	1,217.1	+24
Total	**$163.1**	**$12,596.8**	**$10,666.6**	**+18**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $24,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $200,000.

ENR COST INDEX

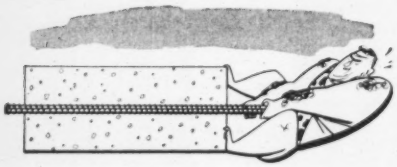
Index Base = 100		1913	1926	1949
Constr. Cost	Nov. '51	547.16	263.01	114.70
Bldg. Cost	Nov. '51	404.50	218.66	114.98
Volume	Oct. '51	511	208	148

Advantages offered by Inland HI•BOND since 1943 now officially recognized by American Concrete Institute

At the annual convention of the American Concrete Institute in 1949, Committee 208 on Bond Stress proposed changes in design stresses for concrete reinforcing bars. These proposals were made after Bureau of Standards tests proved that certain "improved" reinforcing bars could live up to higher standards.

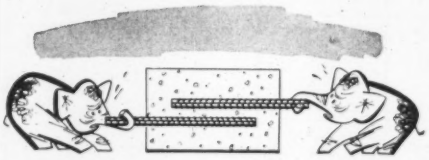
At the 1950 convention, the ACI Building Codes Committee adopted the proposals of Committee 208. And in February 1951, the Institute officially accepted the new building code change.

It is interesting to note that Inland HI-BOND has, for eight years, offered all advantages of higher bonding properties now officially recognized by ACI.



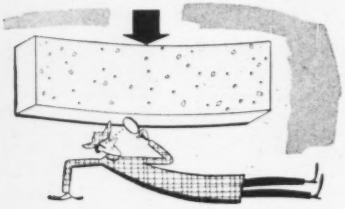
1 Increased bond stresses and greater resistance to slip

See reports on National Bureau of Standards research by Arthur Clark . . . ACI Proceedings, Vol. 43, p. 381; Vol. 44, p. 437; Vol. 46, p. 161; by C. C. Fishburn . . . ACI Proceedings, Vol. 44, p. 289.



2 Increased efficiency at splices

See reports on National Bureau of Standards research by Ralph W. Kulge and E. C. Tuma . . . ACI Proceedings, Vol. 42, p. 13.



3 Reduced width of tensile cracks

See reports on National Bureau of Standards research by David Watstein and Norman Seese, Jr. . . . ACI Proceedings, Vol. 41, p. 293.

4 Hook anchorages unnecessary in most applications

See reports on National Bureau of Standards research by C. C. Fishburn . . . ACI Proceedings, Vol. 44, p. 289; by F. E. Richart . . . ACI Proceedings, Vol. 45, pp. 97 and 237.

See new ACI Building Code

INLAND **HI-BOND®**

The reinforcing bar with the built-in anchorage

INLAND STEEL COMPANY 38 S. Dearborn St., Chicago 3, Illinois

LOTS OF MONEY FOR HOUSING NEXT YEAR

There should be plenty of mortgage money for new housing in 1952. Current prospects are that there would be enough money for another year of more than one million starts—if the materials were available.

Savings and loan associations and savings banks, on the average, plan to go right on lending at their current rate. That's the report from some typical institutions in New York City, based on their own lending programs and their view of what is happening around the country.

Some of these lenders are cutting their volume of new loans—a little. They have been buying mortgages hand over fist for two years, don't want to let their mortgage portfolios get any bigger. But they are not cutting loans abruptly—just getting more wary about who gets the money. And these more cautious institutions are balanced by others that expect to maintain, or even increase, their lending activities next year.

• **Some Qualifications**—The picture is not all rosy. Both savings banks and savings and loan associations want higher interest rates today than a year ago. Most mortgages are going at 4½ per cent, some at 5 per cent. Interest in 4 per cent veterans' government-guaranteed mortgages is much lower, and some banks no longer will take them. But others still do business in guaranteed mortgages, and some even make a few non-veteran loans at 4 per cent.

Some banks report that large housing projects have a harder time getting money. Interest has shifted to dwellings for from one to four families. But it is still possible to get money for multi-family projects.

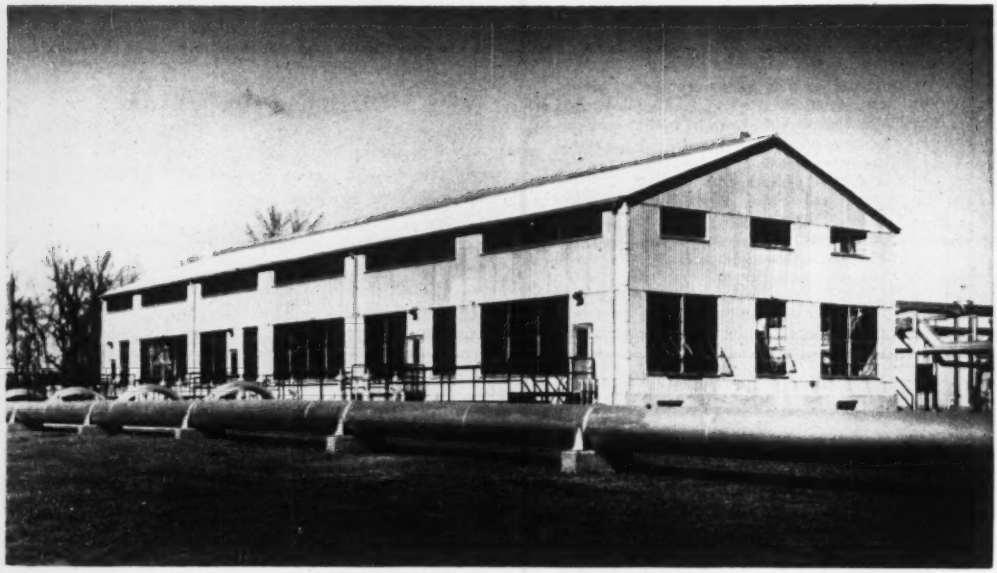
Lenders are more conservative about how much of a dwelling's value a mortgage can cover. Federal savings banks, for instance, are allowed to cover up to 80 per cent with a mortgage. Now a lot of them restrict coverage to 60-65 per cent or less.

• **Help from New Taxes**—But the new tax on savings banks may counteract these developments, make more money available for construction next year. Starting January 1, savings banks are subject to the regular Federal income tax on earnings over 8 per cent of their reserves. They will have to go after more high-return loans to maintain their earnings after taxes. That could mean an increase in mortgage lending, even for banks which are currently reducing their mortgage activity.

• **Other Lenders**—Insurance companies have worked their heavy mortgage commitments lower in the past few months, are now in a better position to take on new mortgages. But mortgage borrowers will have to compete with American industry for funds from insurance companies. Industry, now in the middle of a record wave of expansion, will need new billions in long-term capital next year. Industry, other business, and the U. S. government will all be competing for new funds from commercial banks.

• **Savings**—The U. S. public is helping to keep the level of mortgage lending high—by saving its money. Personal savings jumped to nearly 9.5 per cent of personal income after taxes in the second quarter of 1951, from 4.3 per cent in the first quarter. Savings have stayed high ever since. A lot of this money finds its way into mortgage lending institutions, where part of it promptly becomes available for an expansion of mortgage credit.

As long as savings stay high, savings banks, savings and loan associations and insurance companies can maintain and, in some cases, even expand their mortgage lending activities. And—barring a new wave of scare buying—savings are expected to stay close to their recent level through the first half of 1952.



Pipe ranging from 24 in. to 30 in. in diameter was fabricated from ½ in. and ¾ in. Mayari R plate, for use in the Transcontinental Gas Pipe Line that connects the gas fields of West Texas with New York. This pipe was used at 12 different pumping stations along the line. Fish Engineering Corporation and Fish Constructors, Incorporated, handled the design, engineering and construction of the line.

Mayari R Pipe Withstands Vibration in World's Longest Gas Line

Because pumping equipment generates a certain amount of vibration, the builders of the 1840-mile Transcontinental Gas Pipe Line used Mayari R steel pipe at the pumping stations. The large-diameter pipe fabricated from this low-alloy, high-strength steel connects directly with the pumps, and extends some distance in both directions from the stations.

Mayari R was selected because its mechanical properties are substantially higher than those of carbon steel. It has a yield point, for instance, of 50,000 psi minimum, and an endurance limit of 50,000 psi. These properties permit the use of considerably higher working stresses.

It also has better resistance to impact and to atmospheric corrosion than carbon steel, which means longer service life.

And there are no fabricating problems with Mayari R; it can be cut, formed, punched and machined like carbon steel. The same equipment is used, although slight allowances may be required to offset the higher properties of this grade. Mayari R can also be welded by all of the usual methods.

Now widely used in structures, vehicles, and construction equipment as well as in many consumer products, Mayari R is making design improvements possible at low cost. To get more information on this material and its applications write or phone our nearest sales office for Catalog 259.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

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BETHLEHEM STEEL

Mayari R *makes it lighter... stronger... longer lasting*

CPR 93

THE CONSTRUCTION INDUSTRY will have cause to remember and rue the above letters and figures, which constitute the designation given to the construction price order published in our October 18 issue and made effective as of this week (see p. 23). It will be remembered because every construction job will now be governed by its provisions. And it will be rued because of the increased paperwork required and the real difficulties to be met in applying its pricing procedures to the complexities of construction estimating (ENR Oct. 25, 1951, p. 21).

That the industry will make a conscientious attempt to follow the letter of the order with the hope of achieving its anti-inflation objectives can readily be assumed. Yet the OPS in announcing the order dealt a blow to this conscientious attitude by giving newspaper reporters reason to lead off their stories with statements that substantial increases in construction costs were now authorized.

The order merely permits contractors to charge for materials and labor just what they have to pay for them. Actually, this will add only the rise that has taken place since January 25 of this year (the ceiling date of CPR 34 to which construction has been adhering) and not the rise since the Korean War, which all the news stories used. The difference is that between 2% and about 8%, according to the ENR construction cost index.

CPR 93 is not something to cheer about. This, however, is not because it is highly inflationary, but because it will be difficult to work with. The best that can be done is to try.

Good medicine for building codes

TO ENCOURAGE PROGRESS in the development and use of new building materials and construction methods, the Chamber of Commerce of the United States is advocating passage of a model building regulation act by state legislatures. This act and the reasons for the chamber's action are given in a 28-page booklet, "Building Codes and Construction Progress." The proposed law makes good sense.

It has four major objectives: (1) to require that municipal building codes permit use of any material or construction method that meets the minimum standards of performance required by the municipality; (2) to see that the municipality keeps its code up to date; (3) to enable municipalities to adopt by reference nationally recognized building codes and standards; and (4) to provide legal remedies to any person aggrieved by the code or by its administration.

The chamber rightly maintains that responsibility for modernization and sound administration of building codes rests with individual communities. It therefore urges local chambers of commerce to initiate review of such codes and to bring together various interested groups for that purpose. The construction industry, too, should assist in this work, because it has a big stake in it.

Building codes add to building costs principally through over-conservative design specification and restrictions on new developments. Somebody has to pay for the cost of getting separate approval for new materials in every municipality with a building code. Through greater standardization of code requirements and establishment of a single approving agency for a state or for the whole country, this cost can be reduced to a minimum. This model law proposed by the U. S. Chamber of Commerce is a first step toward such standardization.

The mass-transit problem

"IT IS WORSE NOW than it was before they built the expressway." The speaker was a taxi driver trying to get his fare from North Station in Boston to the Statler Hotel at 5:45 P. M.

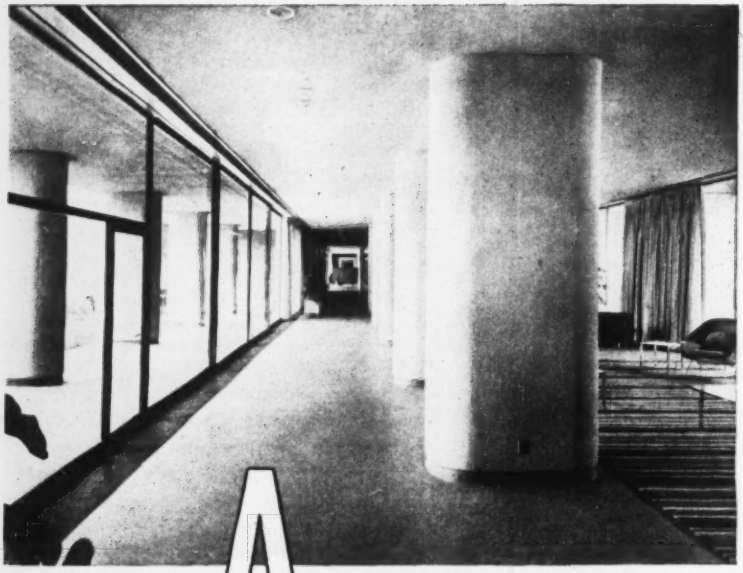
This scene could be repeated in almost any large city. Better access highways, more parking lots or garages have made it easier for people to drive from their own door to work in the city; and higher commuting rates and higher bus or subway fares have reduced the cost differential.

Meanwhile, the mass transportation services find conditions getting worse each year. Higher operating costs compel them to raise rates, thus encouraging the use of private cars. And declining net income makes the raising of new capital for improved service practically impossible.

In most large cities the mass transportation facilities are being run at a loss that cannot be continued indefinitely. Some, like the New York subways, have been subsidized for years. A commuting railroad that is being run at a loss actually is being subsidized by the resulting depreciation of its capital.

It may be that because of these subsidies we have built up what might be characterized as a false metropolitan economy that only now is coming to light. Apparently the real cost of working in a large city but living in a pleasant suburb has been increasing much faster than most people have realized.

Certainly some bold planning such as characterized the conception of the great bus terminal of the Port of New York Authority needs to be applied to the mass transportation problem of most of our large cities. Makeshifts or half-way measures can only put off the day when we learn what is the real cost of adequate commuting service.



SIMPLIFIED CONSTRUCTION—Each column facing requires only two U-shaped concrete slabs, pre-cast and shop-matched for perfect fit. Beauty and all-weather durability make slabs excellent for both exterior and interior use.

Apartment on columns

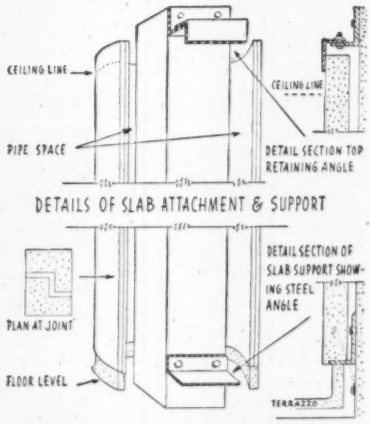
ARCHITECTURAL CONCRETE SLABS COVER INTERIOR AND EXTERIOR COLUMNS, UNIFYING DESIGN

For see-through spaciousness, integrating lobby and gardens into visual unity, the new Manhattan House in New York rests upon 74 handsome columns. Beautiful column facings are pre-cast concrete slabs made with Atlas White Cement and white quartz aggregate . . . attractively accenting the open areas in the building base.

Two flat U-shaped slabs (see detail at right) are joined to form each column. Shop-fitted with shiplap joints, each pair encloses a support column and conduits. Design of the entire ground floor is integrated because concrete slabs are used indoors as well as out.

You will find many beautiful and original uses for concrete facing slabs made with Atlas White Cement. The range of forms, textures and colors is tremendous. And because Atlas White Cement is a true, uniform white, it enhances the rich color values of both aggregates and pigments.

Atlas White Cement complies with ASTM and Federal Specifications. For further information see SWEET'S Catalog, Section 4E/7a and 13C/5, or write Atlas White Bureau, Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.



Only 2½" thick, the concrete-slab column facing, above, is 11' 3¼" high, extending 3½" above ceiling line. It has all the strength of reinforced concrete. Slabs made with Atlas White Cement can be cast in sizes up to 100 square feet or more, complete with lugs and hooks for anchoring and handling. The small number of joints in such large sections often minimizes time and cost of erection.

Architects: *Mayer and Whittlesey and Skidmore, Owings & Merrill.*

Contractor: *Cauldwell-Wingate Co.*

Owner: *New York Life Insurance Co.*

MoSai Precast Facing Slabs: *Dextone Co., New Haven, Conn.*

ENR-C-33

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ENGINEERING NEWS-RECORD

NOVEMBER 22, 1951 VOL. 147 NO. 21

New price controls irk contractors

OPS indication of big construction price rise branded a serious distortion of actual facts

(For Washington story see page 24)

NEW YORK—Construction men last week pointed to what they called a basic fallacy and a basic error in the Office of Price Stabilization's announcement of a new control order for the industry.

With its announcement, OPS was the source for reports widely published in newspapers that the order would bring rises in the costs of new construction because it permits contractors to pass along higher prices of materials and labor.

Said the contractors: OPS makes it appear that this is something brand new, that it is pulling the plug on industry prices. Not so!

Like every other industry, construction (under previous general controls) has been permitted to take account of such price rises—the control in fact isn't even aimed at eventual costs of building, excepting the item of the industry's profits.

In fact, they agreed, the new control is hardly worth that name. Because of the complexity and often nearly gambling nature of the business (bidding on jobs that won't start for months hence, won't be completed for perhaps years) no artificial set of controls can be effective or make much difference in the price the buyer pays.

The only thing that will make a difference is competition.

• **They'll play, but**—Answering a quick survey by ENGINEERING NEWS-RECORD, representative contractors said they would of course comply with the regulation as best possible, although their experience with previous controls over the past year made them apprehensive of the complications involved.

Two of ENR's six questions were the center of most of the fire from contractors: Where would a contingency item fit in the ceiling-price competition; will compliance help . . . to control inflation?

On the others (difficulty of compliance, increased costs of paperwork, possible revelation of confidential information, difficulty of entering new lines of work) most thought they could make out, albeit with some difficulties.

But on the matter of achieving the objective, the contractors had plenty to say.

• **Won't work**—On this matter, they were all agreed—it won't work.

Said H. C. Turner, President of the Turner Construction Co. and a member of the industry advisory committee that sat with OPS in attempts to draw the regulation:

"Compliance of the construction industry in price regulation will not in my opinion, have any effect whatsoever on efforts to control inflation. Competition will do that.

"I do not believe it is possible for the government to devise a price regulation which would be workable or in any way effective, inasmuch as no two construction projects are the same—except a simple regulation as:

"'Contractors shall not pay wages above those approved by the Wage Stabilization Board; pay prices for materials in excess of the price ceilings established for such materials; or apply profit margins greater than those normally charged, considering elements of cost, time, risk and demand on personnel and finances.'"

"Obviously OPS could not draft such a simple regulation."

• **Competition cited**—"Artifical control of anticipated profit and overhead can never be as stringent as open competition," said Edwin A. Johnson, of the Arthur A. Johnson Co. "Anticipated profits only become real profits when the estimated cost is proved correct at the end of the job. Every contractor knows that jobs figured with a high profit frequently prove less profitable than those bid—for some reason—at a low profit rate.

"If prices to contractors for materials and plant and rates of wages were effectively controlled, competition would keep unit prices in line."

Others commented in the same vein. Said Lyman D. Wilbur, Morrison Knudsen Co. Inc. vice president and chief engineer: "If the pricing of

(Continued on page 24)

H. C. TURNER, president, Turner Construction Co. and industry advisor

. . . Let's stay on the job, though, all this may blow over some time next year.

Builders irked . . .

(*Continued from page 23*)

construction work were based on a more or less uniform production per man hour . . . for any given unit of work . . . there might be some basis for controlling prices. However, construction is not that simple. There may be a hundred factors affecting any single unit of work—including the weather.

"Rarely do two estimators arrive at the same answers . . . may get answers varying by as much as several percent. So what good is it to have the OPS say we must reduce our profit by . . . a net of one or two percent?"

• **What's contingency?**—Said one contractor: "It could only be an estimate of costs. We are 'short sellers' in that our jobs usually run one to three years. Our bid includes estimated labor costs for the duration of the job, so we must include contingencies if we think labor rates and other items of cost will increase."

Said another: "It is my understanding that a contingency item can be included in the make-up of one's estimated cost for performing the work.

Said a third: "We presume that 'contingencies' could be considered as part of cost, and not as overhead or profit-markup, if such were the past practice of the construction company. In this connection we refer to flood damage or escalation on materials and wages."

And a fourth: "It would be included normally in the figured cost."

• **Other objections**—Most of the contractors agreed that provisions of the new order (requiring filing of bids on new work well in advance and comparatively long period for approval) would make it difficult and annoying, at the least, to enter bids on work other than what they have been doing since the 1949 base period had set forth.

Discussing pricing practices, however, one had some cogent criticisms. "It is grossly unfair," he commented, "to require that the dollar amount of profit today shall be no greater than during the base period, since under present conditions it takes greater effort, longer time and more management to undertake and complete construction projects.

"Since our experienced staff represents one of our principal assets, just the time factor alone warrants a larger dollar profit to cover their time."

"To comply with this regulation," added another, "it will be necessary for us to install additional controls and additional personnel. This will also increase costs."

OPS frames price regulation for complexities of building

By Vincent B. Smith
Associate Editor

WASHINGTON—Construction finally has a ceiling price regulation that attempts to allow for special conditions of the business.

CPR 93 that took effect this week (Nov. 20) makes full allowance for current costs; it requires a contractor to reduce only his percentage markup for profit to nine-tenths of the highest markup that he used in bids on comparable work in the base period: July 1, 1949, to June 24, 1950.

CPR 93 won't change the present practices or bidding methods of general contractors. And it won't affect either bid prices or costs of construction projects—either up or down. Competition will continue to set the prices of the successful bidder on any project.

Record keeping required by the new regulation adds little or nothing to the present office routine for some contractors—may add a great deal for others. All contractors on public works projects have for years operated under legal requirements to keep records such as are prescribed by CPR 93. Similarly, some contractors for private owners have of necessity kept the same kind of records.

• **Error**—Newspapers and radio commentators went off half-cocked last week when the forthcoming regulation was announced. Knowing next to nothing about construction, they published false conclusions regarding the meaning of the order. Their interpretations did the construction business no good. In part, they can be excused; they got no help from a poor press handout issued by the Office of Price Stabilization.

According to the newspaper and radio accounts, contractors now were free to jack up prices to a new ceiling. As reported by those mediums, the public now was going to have to pay more for houses and highways, as two examples.

Nothing could be farther from the truth. Houses erected by operative builders, who really are merchandisers of homes, never have been under any price control. By law, they are exempt from CPR 93. Also exempted, by the regulation itself, are direct defense contracts for certain government agencies—the Army, Navy, Air Force, Atomic Energy Commission, U. S. Coast Guard, and Maritime Administration.

• **Unit prices**—Actually, the regulation hits the specialty contractors—not general contractors. A contractor who installs materials or equipment on a unit price basis—so much for a square of roofing, or an electrical outlet, will have to justify his present charges in relation to his base-period prices. Work of that kind directly affects the maintenance and repair costs of industrial plants, business houses, home owners and landlords.

General contractors have been concerned about the effect of the new regulation on unit price bids for highway and heavy construction projects. The regulation has no effect on this method of bidding. As pointed out in the comprehensive preview of the new rules (ENR, Oct. 18, p. 23) a contractor may unbalance his unit price bid in any way that the public agency or other owner of the proposed project deems acceptable. For jobs of this kind, OPS rules apply only to the total bid price, and not to the unit prices.

For this reason, the trade guide that OPS issued to translate CPR 93 into English makes no separate mention of unit pricing under the section on lump-sum contracts. General contracts made up of many items—even when bid on a unit price per item—are considered lump-sum contracts. Only the total price for the entire job made up of all the quantity estimates for the various items) comes under the OPS regulation as a lump sum bid.

• **Not happy**—Contractor organization look on CPR 93 as being about as good a regulation as could be expected. OPS had a legal obligation to put some kind of price ceiling on

MICHAEL V. DI SALLE, director of the Office of Price Stabilization.

an industry that last year was responsible for spending $36.6-billion, including maintenance and repair.

OPS and construction people have been in agreement for months on one thing: they both admitted that contractor compliances with CPR 34, governing the service trades, was extremely difficult, if not impossible. OPS says as much on the first page of the new regulation. The general contractors, as a matter of fact, never conceded that CPR 34, in effect since May 11, applied to them. But OPS maintained that the service trades regulation had to cover all construction contractors.

• **Grounds**—Should the agency ever feel obligated to start non-compliance action against any contractor under the old regulation, its printed admission of the imperfections of that regulation on the first page of CPR 93 will help the contractor in his defense.

Says OPS, regarding CPR 34,—it became evident that the pricing theory of that regulation was not realistic as far as the construction industry was concerned. To reconcile the traditionally slender margins and great elements of risk peculiar to a large proportion of the construction industry with the necessity, under CPR 34, to absorb labor and (in most cases) material cost increases, was difficult in the extreme."

Under the new regulation, a contractor can compute his prices on current costs for labor and materials, plus his highest percentage markup for overhead and nine-tenths of his maximum percentage margin for profit on comparable bids during the base period. In effect, these rules mean that bidding for general contract jobs will continue to be governed by competition, rather than by the OPS ceiling limits.

Early in the discussions that led up to the new regulation, the contractors filed petitions asking that open competitive bidding for public works contracts be exempted. There were so many requests of this kind that OPS had to rule out special exemptions for contracts awarded by public bodies.

• **Livable**—As it finally came out, the overall construction regulation is so written that contractor associations in general feel that their members can live with it and operate under it. For one thing, they have to file no applications or justifications with OPS for bid prices that they submit on new jobs all they have to do is maintain normal office records.

Only in one rare case need a contractor file a statement with OPS. That possibility is confined almost entirely to specialty contractors. If a contractor has reported his ceiling price for a service, under CPR 34, he may continue to use that system if he wishes, and he may change over to the new system any time he chooses.

But, in the meantime, if his bid price under CPR 34 is higher than it would be under the new regulation, he must file an explanatory statement with the nearest OPS office.

• **Interpretation**—That exception won't affect general contractors. But some contractors will need interpretations of CPR 93. They can get the information they want from the counsel of the nearest district office of the OPS.

Before you ask OPS any questions, though, you ought to read the regulations and the trade guide that explains it. OPS has thirteen regional offices, plus four to ten district offices in each region. You can get copies of CPR 93 and the trade guide from any of them. For a quicker reading of what the regulation means to you, you could turn back to ENR, Oct. 18, p. 23.

Boost in highway allotments sought

A resolution seeking an increase in allotment of steel for highway purposes "to at least 2% of the total national production to meet demands of vital traffic upon highways of the nation" has been sent to Congressmen and other governmental officials by the American Association of State Highway Officials.

It protests cuts in the allocation of critical materials, principally steel products, which it says have reduced highway construction and maintenance "almost to the point of paralyzing it." Reclassification of highways to the priority position of industrial facilities is recommended.

• **More funds**—At least 20 states passed measures this year designed to increase revenues for highway construction, despite growing indications of the scarcity of materials required for road building, the American Public Works Association has reported in Chicago.

In Massachusetts, the income from a gasoline tax boost of from 3 to 4.3 cents a gallon is earmarked for the payment of a $200,000,000 highway bond issue. Automobile registration fees were raised 50 per cent and truck registration charges were doubled. Fees for drivers' licenses were advanced from $4 to $5. All revenues from these sources are to go into the state highway fund.

Seven other states hiked their gasoline levies. Michigan's rate was raised from 3 to 4.5 cents a gallon. In Illinois, the tax just raised from 3 to 4 cents, will be 5 cents a gallon on Dec. 31, 1952. New Hampshire, North Dakota, Utah, South Dakota and Wyoming increased their taxes from 4 to 5 cents.

• **Broader power**—Legislatures of eight states approved proposals for new or broadened authority to issue highway bonds. These states were Alabama, Delaware, Maine, New Hampshire, Oregon, Tennessee, Washington and West Virginia. A $25,000,000 highway bond issue comes up for a vote in Alabama in December.

New or increased truck taxes or registration fees were adopted in Illinois, Indiana, Michigan, Montana, North Dakota, Ohio, Oregon, Utah and West Virginia.

Idaho and New York passed new weight-mileage taxes based on gross weight of the vehicle—defined as the weight of the truck plus the maximum load it carries. The constitutionality of New York's law is being contested.

• **Chicago boost**—In Chicago, the City Council raised the vehicle tax fees by 50 per cent, effective Jan. 1. This boost is expected to increase the revenue from this source from $10,000,000 to $15,000,000 a year.

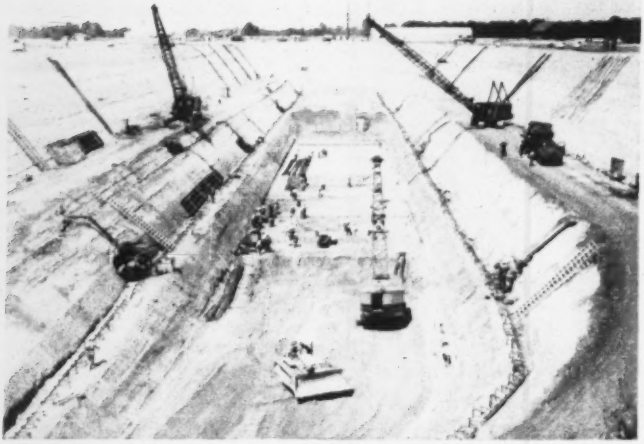
• **More funds sought**—The New Jersey State Highway Department proposes to spend $35,379,760 on road and bridge improvements in the 1952-53 fiscal year. This is $8,585,000 more than in the current construction budget.

In the department's budget requests presented to the State Budget Division, the road bureau also asked $15,611,688 for administrative expenses and $998,350 for maintenance of State institution roads.

The proposed expenditures, if approved as submitted to Governor Alfred E. Driscoll and the Legislature would exceed the current road budget by a total of more than $11,500,000.

• **Detroit controversy**—As approval of the $80 million bond issue to complete the Edsel Ford and John C. Lodge expressways approached this week, controversy flared over acceptance of routes. Special meetings of State and Federal officials were called to discuss the Ford expressway following a route from Conner to the City limits which has been under fire in the Common Council.

• **Maryland roads**—The State Roads Commission of Maryland borrowed $25 million on highway construction bonds last week. They will mature serially from 1952 to 1966 at an interest cost of 1.7305%.



DEEP DEWATERING—Next to the Ohio River, six miles west of Metropolis, Ill. This 70 ft deep excavation will contain the foundation for the $73-million Joppa Electric Station. Built by Ebasco Service, Inc. for Electric Energy, Inc., the plant's main building is to be 600 by 144 ft in plan. Two rings of wellpoints, at about 40 ft and 55 ft depth, make 1¼ on one slope possible in the upper portion and one on one slopes possible in the lower portion. Access to hole is by ramps (to left) at both ends. (John W. Stang Corp. photo)

Utilities seek money for expansions

This week's financial spotlight focused on utility expansion with Virginia and Detroit companies heading the calendar.

• **Virginia Electric and Power Co.**—announced it expects to spend about $40 million in the coming year on expansion of facilities that will bring their total capacity to 970,000 kw. This would raise the company's post-war construction expenditures to over $200 million. The 1952 figure may also be raised another $8 million if the company is able to go ahead with construction of its proposed 91,000 kilowatt hydroelectric plant on the Roanoke River near Roanoke Rapids, N. C. The Virginia Utility has also asked Federal Power Commission approval to build another $27-million hydro plant on the Roanoke River at Gaston, N. C.

• **Detroit Edison Co.**—through Kuhn, Loeb and Co., will put up for sale $40 million of general and refunding mortgage bonds due in 1976. Proceeds from the bond sale will help finance construction of a program that has already cost Detroit Edison $217 million since 1947.

• **New Jersey Public Utility**—the Public Service Electric and Gas Co., announced a sale of $24.9 million of new preferred stock. The sale will be handled by an underwriting group of 67 investment firms. Public Service will use the money to construct a new plant and equipment and to retire a long term debt.

• **Reclamation Bureau**—predicted a triple expansion of power demands in the Missouri River Basin within the next twenty years. If the basin is to escape a serious power shortage in 1970, the bureau said, there must be a big step-up in both federal and non-federal programs for power development.

Ford planning to build community at Dearborn

DEARBORN, MICH.—Ford Motor Co. has ordered a detailed plan for a residential and commercial development to be built on about 4,500 acres of company-owned land here. To be a model community, it will include church, school, playground, and park areas, as well as a community center and sports arena.

The proposed site for the project includes approximately 1,200 acres in Fairlane, the Dearborn home of the late Henry Ford. Two months ago, Ford gave about 42 acres of company land to the city of Dearborn for use as a public park and horticultural training center for school children.

Skidmore, Owings & Merrill, New York and Chicago, have already completed preliminary studies and will now prepare detailed outlines for the program.

Colorado judge enjoins classifying of engineers

DENVER—Judge Joseph J. Walsh of the district court here has ruled that an amendment to the Colorado registration law for engineers that authorizes the State Board of Registration for Professional Engineers and Land Surveyors to register engineers in their principal field of activity is unconstitutional and consequently has refused to dissolve an earlier injunction he issued against such classification.

Judge Walsh's decision marks another victory for Kenneth A. Heron, a Colorado engineer, in a long fight he has been conducting to keep the engineers' board from issuing certificates indicating that the holder is qualified only in certain fields of engineering and from publishing rosters listing those fields.

Mr. Heron's fight began in 1945 when, on returning to Colorado to practice, he received a card classifying him as "especially qualified to practice the branch of civil engineering."

• **The Rules**—At that time, the Colorado registration act did not specify such segregation, but the board had inaugurated it under its own rules. These rules said that registrations would not be strictly required to confine their practice to fields in which they were registered, provided they were fully qualified to practice in the other fields. An exception was made in the field of structural engineering.

Mr. Heron protested against application of the classification rule and, when the board refused to abandon it, he took his fight to the courts. In July, 1949, the district court issued a temporary injunction against publication of a roster in which the registrants were classified.

The following November, Judge Walsh made the injunction permanent, whereupon the board appealed to the state supreme court, but before the appeal could be heard, the legislature amended the registration act so that it now directs the board to publish a classified roster.

• **Goes back**—Because of this amendment, the supreme court, in June of this year, sent the Heron case back to the trial court. On July 2, the board asked the trial court to dissolve the earlier injunction, and on Aug. 2, Mr. Heron asked the court to declare the amended law unconstitutional on the ground that the legislature did not specify the qualification for registration in each of the seven classes set up in the act.

On Nov. 16, Judge Walsh found that the act was unconstitutional and refused to dissolve his earlier injunction. The board is expected to appeal.

Civil Defense workers get first test in NYC

NEW YORK—Engineering and construction workers for Civil Defense got their first real test in New York City this week. America's biggest city pulled the largest mock air raid since World War II. It involved thousands of Civil Defense workers and set a precedent for other communities throughout the nation.

The purpose of the drill was to see how fast and effectively the CD workers would answer the alert, and how they would operate under the simulated conditions of an atomic bomb raid. It was also designed as a dress rehearsal for a surprise raid that will be held during the week of Nov. 25 and involve the public.

• **Two atom bombs**—The New York alert was sounded at 7:30 p.m. Theoretically two atom bombs were dropped on the city; one near the Manhattan-Bronx line, the other in Brooklyn. Other areas of the city were also "damaged" by high explosive and incendiary bombs. At 7:45 p.m. the all clear was sounded.

Immediately, CD personnel went to work. Along with police, fire and hospital workers, Public Works and sanitation crews and equipment poured into the "damaged" areas throughout the city.

The main demonstration area was in Brooklyn at a site being torn up for construction of the Brooklyn-Queens Connecting Highway. The locale was chosen because it was considered to have the same general appearence as an area near the "ground zero" point of an atomic explosion.

• **CD in action**—While the Fire Department set up a spectacular wall of water to block the theoretical path of the spreading fire, crews from the Public Works Emergency Division were shoring up buildings. Two water main breaks were simulated, and crews from the departments of Water Supply Gas and Electricity rushed to find the "damage." The break located, the crews shut off the controlling mains and restored service.

New York's "air raid" also involved workers and equipment from other cities nearby. Public Works and fire equipment was rushed to the bombed areas of New York from Westchester County. New Jersey cities, as far away as Perth Amboy, also contributed aid.

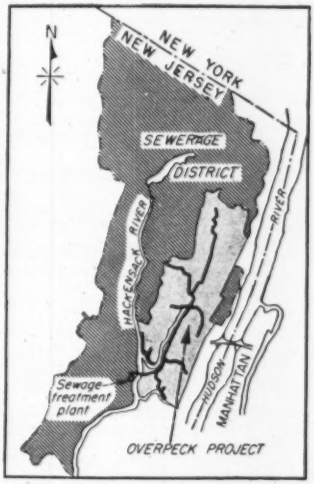
• **Casualties**—A Public Works photographer, Joseph Sheldorfer of Queens, N. Y., shooting pictures of the construction teams in action had a heart attack and died. Others had minor injuries and several cases of smoke poisoning were reported.

RADIO-ACTIVITY DETECTION team works with Geiger counter and special masks, during civil defense exercise.

Sludge treatment plant Opens in Bergen County

LITTLE FERRY, N. J.—A 20-mgd activated sludge treatment plant was dedicated last week by the Bergen County Sewer Authority as first state in its project to clean up pollution in the Hackensack River (ENR Oct. 6, 1949, p. 18).

Future stages—to cost another $18-million—are now under design by Bogert-Childs Engineering Associates, New York, consultants to the authority. Terminal Construction Corp., Woodridge, N. J., was general contractor on the completed work.



Bergen County sewer district

EJC manpower group seeks better use of engineers

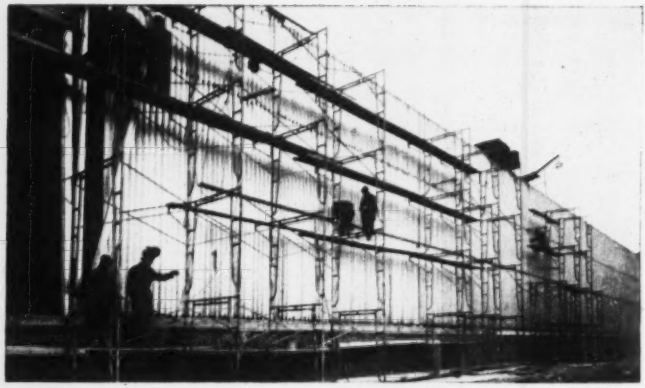
Fuller use of engineers by both civilian and military agencies is being sought by the Engineering Manpower Commission of Engineers Joint Council. To this end, according to T. A. Marshall, Jr., executive secretary of the commission, the commission has appointed over 400 local representatives to "beat the drum" for most effective employment of the existing engineering talent of industrial organizations and military agencies, for increased enrollment in engineering schools, and full recognition by draft boards of the critical situation on engineers.

The local representative are to advocate "rapid upgrading of young engineering talent, relieving experienced engineers of all details . . . that can be performed by nonengineers."

Dam proposed by Army

WASHINGTON—The Army Board of Engineers for Rivers and Harbors last week proposed a multi-purpose dam and canal instead of the two congressionally authorized single-purpose dams for the Cumberland River.

The Army proposed dams would include a navigation lock and power plant and would be located about 11 miles below Kuttawa, Ky. The canal would connect the pool formed by the proposed dam and lock with the pool formed by the Kentucky dam and pool on the Tennessee River. Federal cost of the proposed project is $145 million.



MODERN INDUSTRY—One of the most dramatic architectural features of Lincoln Electric Co.'s new 17 acre plant in Cleveland, Ohio, is the aluminum "curtain wall" 28 ft high, consisting of 15-in. wide aluminum panels, custom rolled to form 3½-in. deep box sections. The plant was designed and erected by The Austin Co.

Vast expansion in aluminum output carries potential impact on building

By 1953 the aluminum industry plans to be able to produce about 3 million lbs annually—compared to the mid-1950 capacity of less than 1.5 billion lbs (ENR Nov. 15, p. 26).

This tremendous new output may have an epoch making impact on construction; it may revolutionize certain phases of the industry.

Already construction is the largest single customer of the aluminum industry. Even under the severely restricted trade conditions of the past year, more than 500,000,000 lbs of aluminum products went into this field. And as soon as the defense-created shortages ease, the industry plans to begin doubling its supplies for construction.

Where will it go?—into walls, roofing, partitions, and a hundred different applications from window frames to electric wiring. The equipment used to roll sheets and extrude sections for today's defense machine, tomorrow may be pushing out aluminum for construction in greater volume than most people visualize.

• **Prospects**—Aluminum Company of America estimates that construction applications which took more than 18% of the company's total output last year, could absorb 30% of its production within one or two years after the defense metals shortage is over.

Reynolds Metals Co., equally sanguine, indicates its sales to the construction industry could easily double in two years. Kaiser Aluminum and Chemical Corp. and the new Anaconda Copper Co. venture, are expected to follow.

The basis for these predictions goes back to the roots of our economic system. The aluminum producers believe they can produce better building materials faster and at less cost than other materials now being used.

• **Competition**—The current defense expansions are helping aluminum's position competitively with other industries. Not only is modern producing capacity building up at a faster clip than its competitors, but war uses are providing the industry with an added opportunity to experiment and gain building products experience.

New markets for aluminum will come at the expense of other materials—principally masonry, steel, wood, and copper. Markets to feel the biggest impact will be those where aluminum sheet and extrusions can be used. No booming construction market for aluminum structurals is contemplated in immediate plans.

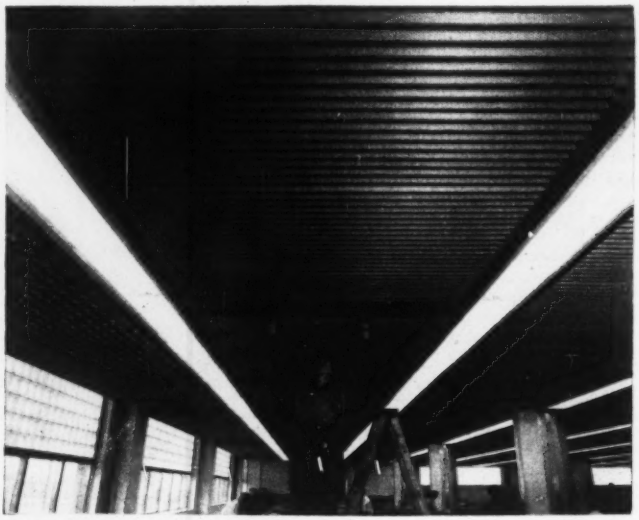
• **Looking ahead**—One of the largest potential markets for aluminum is in building exteriors—"curtain walls" the industry calls them—for commercial and industrial buildings, school buildings, hospitals, even farm buildings and houses.

In "curtain wall" construction the walls are not self-supporting, but hang on the structural framework of the building. In the new Alcoa building in Pittsburgh, the "curtain walls" with insulation are 4-in thick. The company claims they will provide the same insulating properties and have the same permanence as a 12-in conventional brick wall. They weigh 29 lbs per sq ft, compared to an estimated 87 lbs per sq ft for conventional brick.

In 30 stories of building, enough floor space is saved by the thinner walls to equal the area of 1½ floors. In addition, lighter walls mean less tonnage of structurals to support them, and less foundation work to support the building.

• **Types compared**—Buildings can be walled in aluminum castings, sheets, or extruded sections—and that is the trend of the evolution.

When cast panels are used, patterns must be made for each condition and may cost $5,000 to $6,000 for a building. Cast sections are



SOUNDPROOFED CEILINGS—In this modern office building, "drop" ceiling panels slip in place and give access to entire ceiling areas.

heavier for unit spandrels than either sheet or extrusions.

Fabrication of stamped sheet panels is more complicated. Stamping dies to make the panels for a building could cost $35,000. One advantage is in lower erection cost because of larger unit size.

The least expensive walls for the largest volume of building, however, is tongue and groove extruded panels, dies for which may cost only $400. And there is where the largest market potential lies according to Alcoa planners.

• **Another prediction**—Reynolds sees walls, partitions and ceilings now in sixth place on the shipment list for construction, but says this market can well become one of the first three within a few years. Present aluminum consumption for this purpose is about 15,000,000 lbs per year. The estimated potential is 60,000,000 lbs per year within the next few years, Reynolds says.

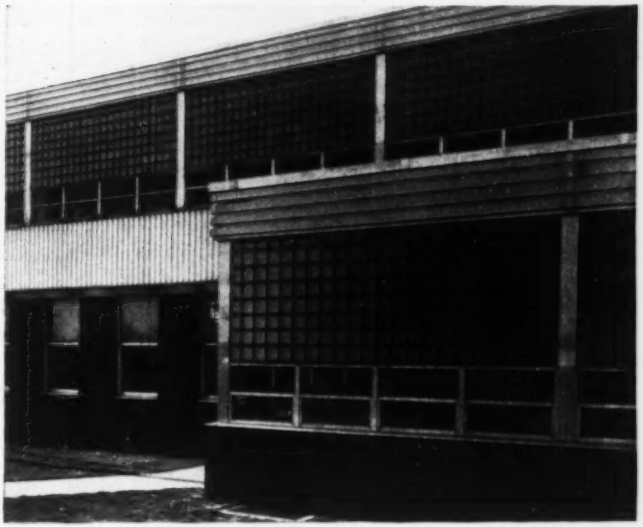
Such rapid expansion into a new market is not without precedent in the aluminum business. For example, in 1939, all the aluminum windows ever made totaled 20,000. In 1950, the number produced was well over 2,000,000. At present, aluminum windows constitute the second largest construction use. Last year about 95,000,000 lbs of aluminum went into aluminum windows and accessories—almost 20% of the total metal windows used in construction.

Largest among the current markets in construction is roofing and siding, estimated to account for 200,000,000 lbs of aluminum yearly—40% of the total aluminum going into building. Reynolds says this might rise as high as twice this amount in the next few years.

• **More markets**—Builders hardware, duct work, fire escapes, lighting fixtures and similar uses are taking about 48,000,000 lbs yearly—about 10% of the industry. Reynolds thinks that builders hardware alone will expand so fast that 4,000,000 lbs yearly will be reached soon and eventually it will reach 10,000,000 lbs when current development work by large hardware manufacturers has been completed.

Aluminum fire escapes are a particularly interesting new application in this group. Recently Reynolds supplied more than 250,000 lbs of aluminum for fire escapes in a single Baltimore Housing Authority project. By 1953, Reynolds marketers anticipate that more than 107,000,000 lbs of aluminum will be going into all forms of general construction products.

Ornamental products such as grillwork, handrails, marquees, store fronts are steadily advancing as an element in modern design. Bridge railings, highway guard rails, and light poles represent good, although presently small, aluminum applications.



PATTERN OF TOMORROW—Extruded aluminum panels such as those used for curtain walls in construction of Fort Couch school, Pittsburgh, Pa. represent one of the largest potential markets for aluminum in the building industry.

• **Smaller units**—Houses and other buildings—storage bins, utility buildings, garages, aircraft hangars, residential housing, and similar structures fabricated in part before assembly at the site, or erected in place—these are already here and aluminum planners see many more in the future.

Alcoa's experimental home at New Kensington, Pa., is an example of pioneering work in these applications. Now more than three years old, the home was built after several years of research into home building uses to test the results. Applications range from doorknobs and baseboards to aluminum framed picture windows and exterior wall panels. Its lessons are serving today as a guide to broad new product developments.

Alcoa sees another potential market in construction of water works and sewage disposal plants where structural members, walls, roofing and other sections are exposed to moisture and corrosive conditions. Where aluminum has been installed in treating plants and settling basins, it is proving that considerably less maintenance and longer service life can be anticipated, the company says.

• **Structurals**—Use of aluminum structurals, while fast developing, does not yet promise a substantial tonnage in applications because of the price factor. Present instalaltion indicate some market potential in the future, however.

Officials of Washington D. C.'s Park Commission for example are reported to have indicated they will use aluminum for the structures of highway bridges and overpasses with spans 30-ft to 60-ft. Principle advantage will be in lower cost of maintenance. Other bridge commissions are studying possibilities of all-aluminum bridges similar to the structure at Arvida, Canada.

An interesting installation being observed is the floor structure in the Smithfield St. Bridge in Pittsburgh, Pa. In 1931 the bridge was weakening and the city was faced with building a new one. They decided instead to lighten the load on the superstructure by installing an all-aluminum floor structure, expecting about 10 years additional service. It has now lasted 20 years and latest inspections show it may last another 10 years yet.

Canada spurs Seaway

OTTAWA—Establishment of a special government agency to build the St. Lawrence seaway was proposed Monday in the Canadian House of Commons by Transport Minister Lionel Chevrier.

The agency would be called "The St. Lawrence Seaway Authority" and would have power to build and operate the waterway between Montreal and Lake Erie. It would set tolls for shipping and borrow money up to $300 million.

France's great Donzere-Mondragon navigation and power project adds up to a . . . .

Renaissance on the Rhone

Here's what new thinking has produced:

- **Earthmoving—on scale of huge Missouri Valley jobs**
- **Power plant output—largest in western Europe**
- **Canal—bigger than Suez**
- **Ship lock—as high as McNary's**
- **Tainter gates—widest and highest on record**

Waldo G. Bowman
Editor

BIG THINGS ARE HAPPENING on France's Rhone River—so big in the physical sense as to rival the largest anywhere, so significant in changed patterns of French construction thinking as to suggest a modern renaissance.

Nor is such ancient reference whimsical or forced. The famous Renaissance (that of the 16th century) was not—in France at least—so much a "rebirth" of ideas forgotten—as the name implies—as it was the throwing overboard of traditional ideas and outmoded rules. And it is pertinent to recall two other facts: These ideas and rules related quite as much to science and construction practices as they did to art and religion; and they originated abroad, being brought back to France from Italy as the only spoils of a war that otherwise ended disastrously for the French.

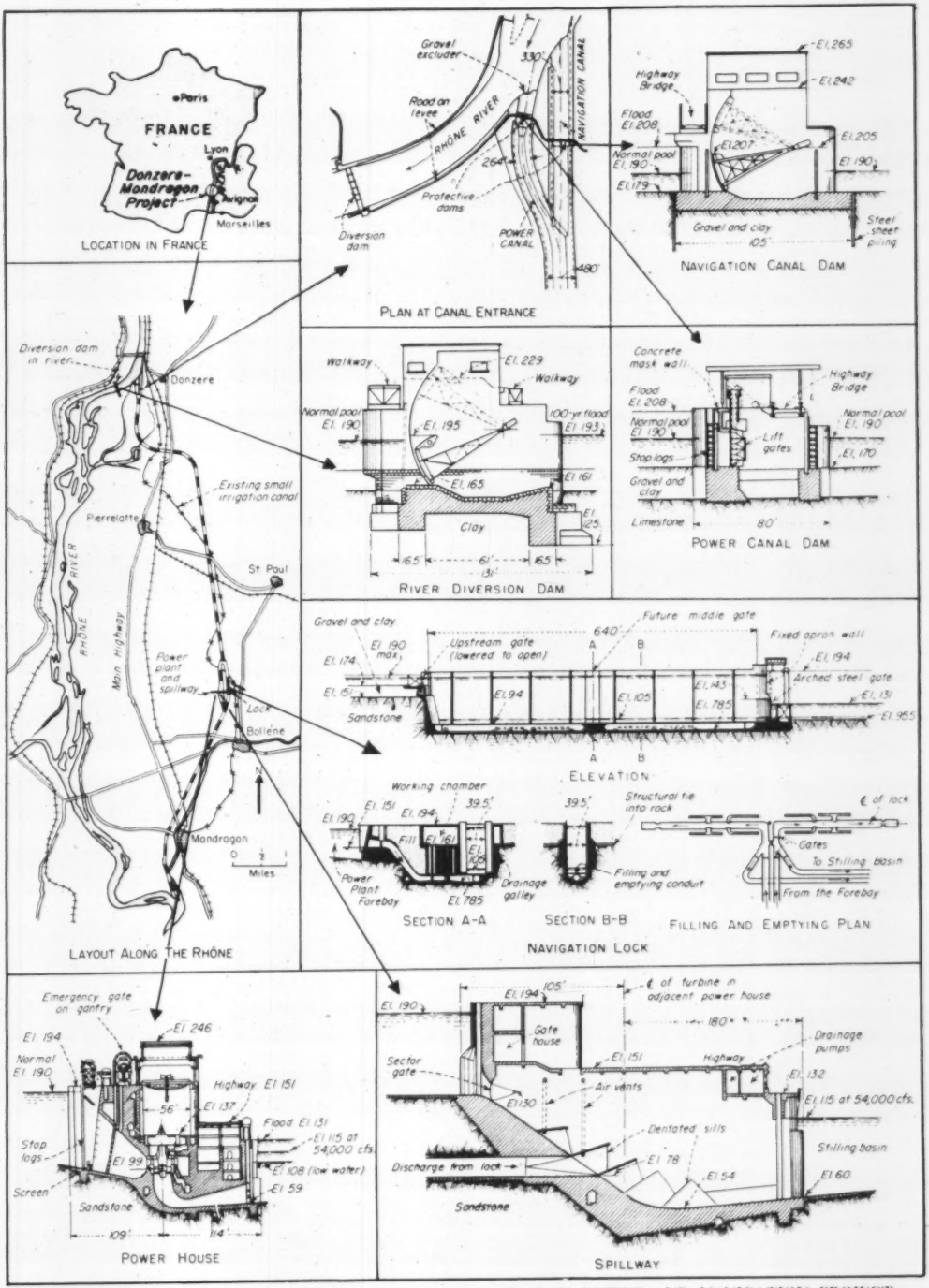
Today on the Rhone some old construction traditions are again being abandoned, some new ideas tried. And once more, too, the ideas are of foreign origin and born of war—imprinted on French consciousness through the deeds of U.S. soldier-operators of American construction equipment in the plains and valleys of France.

France's modern renaissance project goes by the prosaic name of Donzere-Mondragon, these being the names of the two Rhone Valley towns that mark its limits. Between them there is being built a 17 mile canal that will not only permit boats to bypass 20 miles of swift and winding river channel, but will carry water to generate 2 billion kw hr of electric energy annually—biggest single addition ever made to the country's hydro output.

But while navigation and power describe the purpose of the project, it is its parts—and the procedures used to build them—that give it stature, and prove that a new order of thinking is at work.

Thus there are three dams required to regulate the river's flow into the canal. Three of the 11 tainter gates on these structures have spans of 148 ft, a world's record supplanting that of the 114-ft gates erected last year on the spillway for Horseshoe Dam in Arizona. Even Grand Coulee's drum gates have a span of only 135 ft and they are but 28 ft high, while one of the Rhone tainter gates is 30 ft.

The canal powerhouse will contain six 50,000-kw generators; a total capac-



STRUCTURAL FEATURES OF FRANCE'S DONZERE-MONDRAGON POWER AND NAVIGATION PROJECT

ity rivaled in France only by the six 65,000 kw units at Genissiat Dam, 150 miles upstream and first of the Rhone power projects to be completed (ENR June 24, 1948). But whereas Genissiat's annual output is 1.65 billion kw hr, that of Donzere-Mondragon will be 2.00 billion, making it the largest in western Europe, and exceeded only by Russia's Dniprostroy in the East.

A ship lock at the dam will have a single lift of 86 ft. Only the lock being built for McNary Dam on the Columbia River has a higher lift (92 ft), while its length of 500 ft is appreciably less than the 640 ft on the Rhone.

The canal itself is 82 ft wider than Suez and of about the same depth. And it is the 480 ft width and 34 ft depth of the Donzere-Mondragon canal that gives rise to the greatest innovation on the job from a French standpoint—excavation of 66 million cu yd of earth. (As a benchmark it may be noted that Garrison and Oahe Dams on our Missouri River involve 70 and 78 million yards respectively, and they top the list of our largest.)

Nothing approaching this magnitude of earthmoving had ever been dreamed of in France before. Here, indeed, old traditions had to be abandoned, new ideas tried. More than $2 million worth of American earthmoving equipment was purchased for the job to supplement floating dredges and dry-land bucket excavators of European manufacture.

• **First of a series**—The Donzere-Mondragon project (ENR July 31, 1947 and April 5, 1951) is the first of several similar ones planned to improve navigation on the lower Rhone by bypassing rapids with canals on which hydro power can also be generated. Actually the second project, at Montelimar 10 miles upstream from Donzere, is already under active design.

DOUBLE ENTRANCE to canal being fitted with protective dams. Diversion dam in Rhone River is off the picture at upper left.

Located some 65 miles above where the river flows into the Mediterranean, the Donzere-Mondragon project was chosen as the first to be built because it offered the highest head, the best foundation conditions, and the greatest improvement for navigation. In all, some eleven power plants are envisioned in the 165 miles of the lower river which then will be more than 50% canalized. The total power installation would be on the order of 2,000,000 kw.

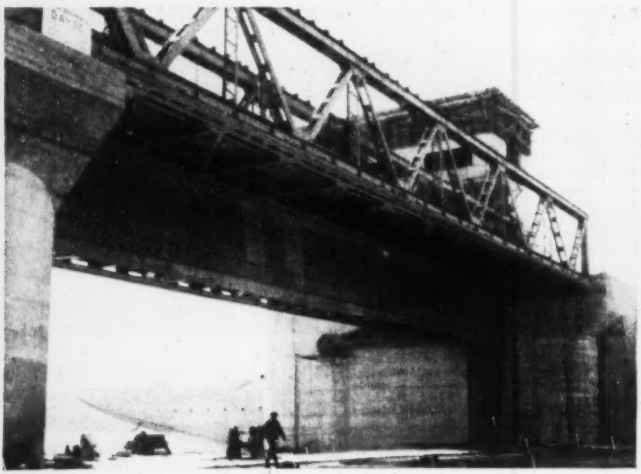
Rhone development is in charge of a public corporation, Compagnie Nationale du Rhone, in which cities as well as federal and state governments have a share. The work has often been likened to the TVA since it takes in an entire valley and is multipurpose in character—power, navigation and even irrigation to a limited extent.

The Donzere-Mondragon project alone is estimated to cost $150 million. It has benefited substantially from United States aid through the FCA—about $33 million of counterpart funds having been allotted to it up to the present time. P. Delattre is director general of CNR, Marc Henry, technical director and G. Gres, chief of construction.

Broadly the project is composed of three parts, (1) the intake and control structures at the upper end of the canal; (2) the canal itself; and (3) the power house, dam and lock near the lower end. Each part has its particular points of interest.

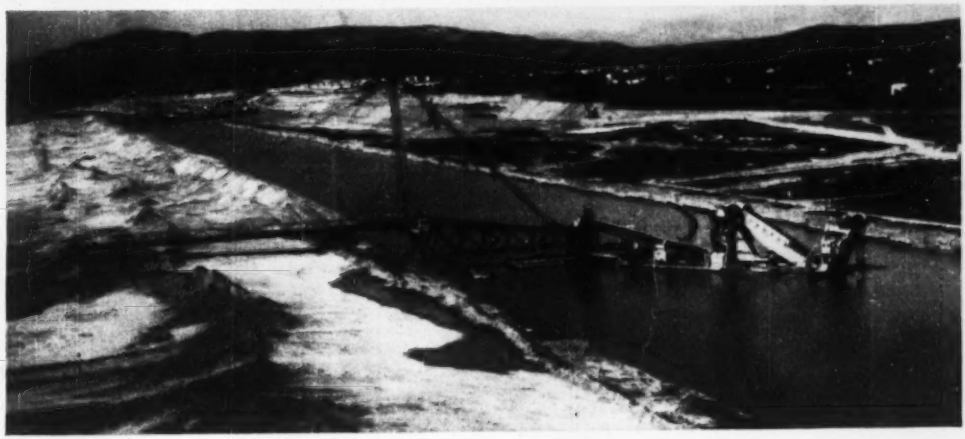
• **Three headworks dams**—The canal entrance was laid out as a continuation of a straight reach of the Rhone at a point opposite Donzere where the river curves sharply westward. By placing the diversion dam about a mile down this curve a sizeable reservoir was created in which barge tows can be safely maneuvered before entering the canal.

Because the canal is of such large size—54,000 cfs—it was deemed necessary to divide the entrance into two arms, thereby permitting a reduction in the velocity (to under 5 ft per sec)



WORLD'S LONGEST TAINTER GATE has 148-ft span. This one, 23 ft high, is in navigation canal entrance. Another of the same span in river diversion dam is 30 ft high, setting another record.

UNIQUE SILL with cantilevered sawtooth edge causes river gravel to bypass power canal entrance.



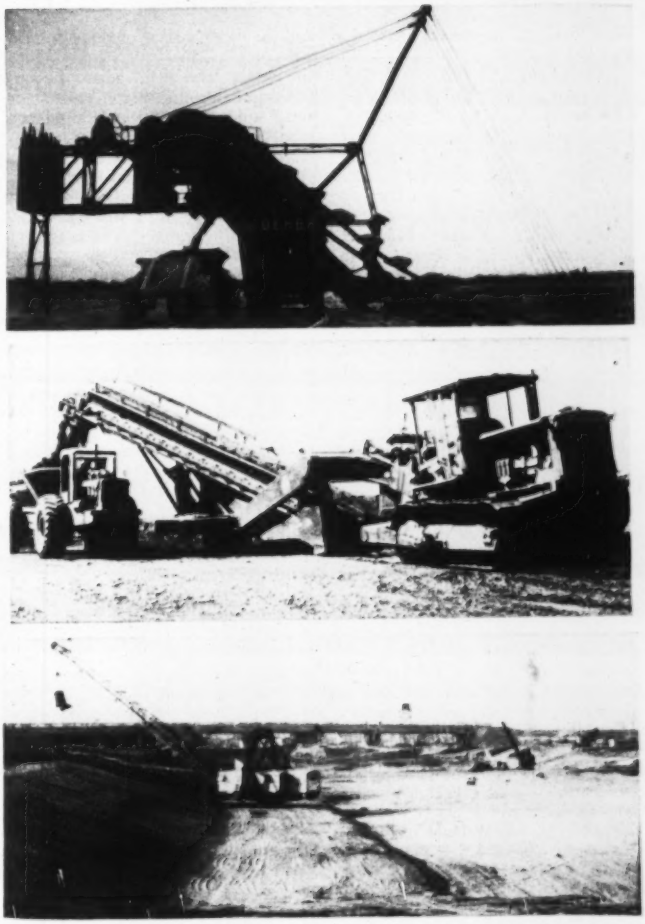
in the navigation entrance. One-third of the flow enters the 330 ft wide by 11.5 ft deep navigation canal arm, while the remaining two-thirds goes through a narrower (264 ft) and deeper (18 ft) entrance to the power canal arm some 1200 ft farther down the river. The two arms join about 3500 ft from the river navigation entrance to form a single canal 480 ft wide.

Each of the entrances is protected by a gated dam, the one in the power canal arm being relatively near the river while the one for the navigation canal is farther removed (1600 ft) to enable barge tows to be under safe control before they have to pass through one of the two 148 ft openings. The tainter gates across these openings set a new record in span length, and are 23 ft high to give a freeboard of 5 ft over the highest known flood.

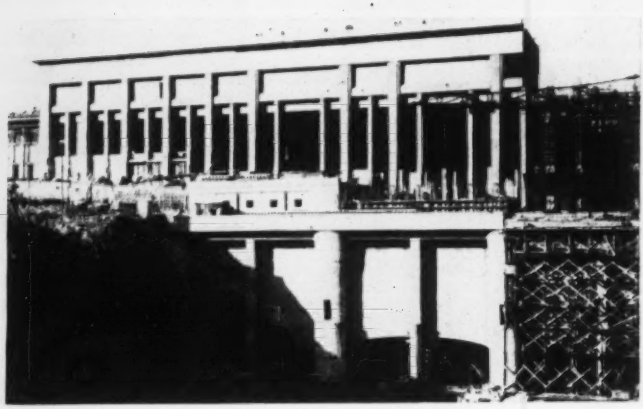
There are three 79 ft openings in the power canal dam spanned by lift gates operated from an overhead concrete structure that will also supplement the 21 ft height of the gates in giving protection against the highest floods.

The gates in these two dams will normally be left open. They will be closed to protect the canal and powerhouse in the event of high floods, to lower the water level in the canal to permit bank repairs or to protect the surrounding countryside in the event a canal bank is breached. They will also serve a vital purpose in controlling the inflow into the canal during the initial filling period when the water level must be raised very gradually.

There is also the possibility that the gates may need to be closed so that the entire Rhone discharge can be used to scour out deposits that may occur in the reservoir above the river diversion dam. The canal entrances are, of



DIGGING the canal with (top) Dutch floating bucket dredge and belt conveyors and (in descending order) Belgian bucket-chain excavator and U. S. tractor-wagon; U. S. tractor, excavating loader and wagons; and U. S. draglines.



COMPLETED powerhouse will be equipped with six 50,000-kw electric generators to add 2 billion kw hr per year to France's hydro output.

course, designed to confine these deposits to the river.

Both entrance sills are considerably higher than the river bed at the center of the stream—18 ft for the navigation canal and 11 ft for the power canal. The navigation sill consists simply of steel sheet piling, but a reinforced concrete structure founded on rock was required for the power canal because of the high velocity of flow. Moreover the upstream lip of this structure is in the form of a sawtoothed shelf to aid in guiding solid material away from the canal entrance and into the river. Model tests showed that the sawteeth set up eddies that effect this necessary guidance. This canal entrance was also located on the curve of the river where the natural tendency of the current is to move sediment toward the center of the stream.

• **Largest tainter gate**—Among the headworks structures, the river diversion dam, however, is the most important—structurally and from a construction standpoint. It contains six gates, five of 105 ft clear opening and one of 148 ft. This latter, with a 30 ft height (7 ft more than the two gates of like span in the navigation canal) is the largest tainter gate yet built. It was required in the diversion dam to pass Rhone River shipping in case the canal should be closed, and to accommodate a few barges that are too wide for the 39 ft width of the canal lock.

A feature of this gate is a top flap 5 ft 9 in. high, which can be operated independently of the main body, and at a greater speed—1.6 ft per min as against 0.66 ft per min.

• **The Canal**—The alignment of the canal is shown on p31. The first 10 miles, from the intake to the power house, is confined in embankments, and the water surface of this headrace part of the canal is generally above the natural level of the adjacent countryside. Below the power house, for the 7 miles to the outlet, the tailrace canal is in cut except for some embankment at the lower end in the vicinity of Mondragon.

The strata of materials to be excavated are progressively vegetable matter and silt, an alluvium of sand and gravel and a marl that is mostly clay. The headrace canal bottom is in the alluvium, that of the tailrace canal in the marl.

In the headrace canal the groundwater is easily drained off, so that 21 of the 25 million cu yd of excavation can be done in the dry. Also, the alluvium makes good embankment, and permits a 3:1 slope. In the tailrace canal the groundwater line is considerably above the canal water surface so that wet excavation is required. It totals 30 million cu yd, and one-third of it is vegetable matter and silt, part of which must be used for embankment. Silt embankments require 5:1 slopes, with the toes confined in alluvium dikes.

The headrace canal is 480 ft wide at the water surface, 274 ft at the bottom and 33 ft deep. The tailrace canal is 415 ft wide at the water surface, 192 ft at the bottom and 41 ft deep. As a comparison, the greatest width of the Suez Canal is 400 ft while its depth is 43 ft.

The headrace canal will not be lined since the alluvium will be rendered watertight by the deposition of the silt from the canal water. However, a strip about 10 feet wide at water level will be covered with a bituminous revetment as a protection from wave action. Where embankment is silt, a layer of alluvium 6 ft thick will be laid as a lining, and also revetted at water level. No revetment will be used in the tailrace canal which is largely in clay.

One other feature of the canal cross-sections is worth noting—the provision of small canals or ditches along the outside toe of the embankments to take care of the groundwater in the alluvium stratum. Along the headrace canal these ditches are for drainage purposes, protecting the surrounding land from excessive moisture. Along the tailrace canal, which is sunk far below the groundwater line, the opposite danger—lowering of the groundwater and drying out of the land—had to be counteracted. Here the ditches are used to recharge groundwater into the soil. Gravel wells placed at intervals in these ditches reach down to groundwater level.

• **Excavation**—The guiding principle used in selecting excavation equipment was to reduce the rehandling of material to a minimum—to place it directly in the embankments. Thus draglines were extensively used for the dry and slightly wet work, while floating bucket-chain dredges coupled to belt conveyors were utilized elsewhere. A special type of bucket-chain excavator was also used in the dry.

Despite the attempt to avoid rehandling, however, a large amount of other earth-moving equipment had to be provided. Of American manufacture, it marked an innovation in French construction practice. It included Allis-Chalmers, Caterpillar and LeTourneau tractors, Allis-Chalmers motor graders, a Euclid loader, Euclid wagons, LeTourneau carrying-scrapers and Bucyrus and Harnischfeger power shovels. The walking draglines were of Bucyrus-Monighan and Marion manufacture. The floating bucket dredges were built in Holland, while the bucket-chain excavators came from Belgium.

The disposition of all this equipment—nearly 300 separate, major pieces—was as follows: From the intake, for the first five miles, the material down to groundwater level was removed by tractor-scrapers and by the loaders in combination with wagons. One of the big floating dredges then took over and completed the work.

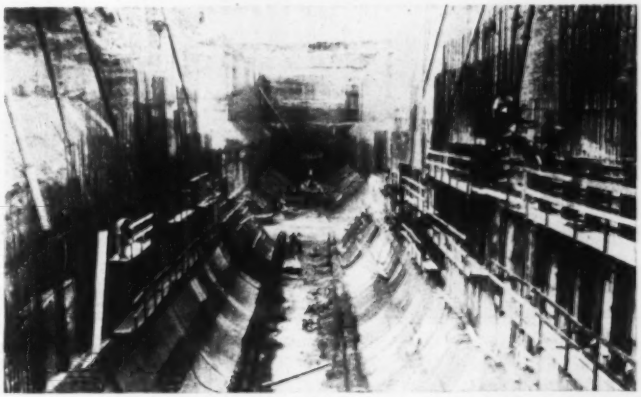
For the next five miles to the powerhouse the walking draglines did the entire job in the dry, supplemented by tractor-scrapers when the 110 to 140 ft booms could not reach the center of the canal. The work was begun with 7 machines with bucket sizes ranging from 3 to 7 yd, later supplemented by an 8 yd Marion with a 200 ft boom. This huge machine had a capacity of 660 cu yd per hr, equal to that of one of the floating dredges. It may also be noted that the Euclid loader in the

upper part of the canal was also used with enough 13-yd Euclid wagons to achieve this same capacity of 660 cu yd per hour.

The wide area in the vicinity of the powerhouse was excavated with power shovels loading into 13-yd wagons, while immediately below the powerhouse the bucket-chain excavators were used. These huge machines, of which there were six, operated on rails along the top of the cut, their ladders with two to three dozen buckets on them extending down the slope. The ladders were from 27 to 90 ft long and also discharged into 13-yd wagons.

The lower six miles of canal was excavated by four of the huge floating dredges. The material, brought up by lines of 18-cu ft buckets, was discharged onto belt conveyors which, supported by floats and finally by cables from a high tower on a barge, deposited the material directly in the embankment as much as 250 ft away.

The total amounts of material excavated by the different types of machines are shown in the accompanying table. Most of the material went into the embankments, which were from 10 to 45 ft high, but a large volume of the alluvium was also stockpiled as aggregate for the 1 million cu yd of concrete that the job required.



LINING THE LOCK which will lift Rhone barges 86 ft. Only the Columbia River lock at McNary Dam has a higher lift.

CANAL EXCAVATION ON THE DONZERE-MONDRAGON PROJECT

Types of machines	Million cu yd
Scrapers, loader and wagons	5.3
Shovels, small draglines	5.3
Large draglines	17.2
Floating dredges	33.0
Bucket-chain excavators	5.3
Total cu yd removed	66.1

• **Powerhouse-lock ensemble**—By a streak of good fortune the only rock along the entire canal route occurs at a point where the powerhouse, dam and lock could be suitably located. It consists of a sandstone stratum forming a bump in the deep-lying bedrock. With the powerhouse on the right and the lock on the left, the width is filled out by a water bypass structure or spillway between.

Designed for the entire canal flow of 54,000 cfs under a head varying from 52 to 92 ft, the power plant will contain six adjustable blade Kaplan turbines connected to 50,000 kw generators. A feature of the turbines is the load on the thrust bearings which will total 1,300 tons. The record is held by the 1,600 ton load at Grand Coulee.

The powerhouse—a structure 610 ft long, 230 ft wide and 185 ft high—is equipped with two 56 ft span traveling cranes of 246 ton capacity.

Because a shutdown of the power plant could cause serious harm to the canal upstream, a spillway capable of handling the entire 54,000 cfs flow had to be provided. Located beside the powerhouse, it is in the form of a dam with six openings equipped with sector-type sluice gates. Steel-covered dentated sills will dissipate the energy of the discharge.

The lock, provided to pass barge tows, is large as well as unusual in its filling and emptying arrangement. It is 39.5 ft wide and 640 ft long, and is so designed that an intermediate gate can be installed at the middle of the length. Its lift of 86 ft, only 6 ft less than the world record set by McNary Dam lock in the U. S., made the design of the water supply and discharge system a fundamental consideration. And the problem was complicated by the fact that the system had to serve both the whole lock or half of it (when the intermediate gate was in place).

The solution is the use of two separate systems, one serving the upstream half, the other the downstream half. As shown in the drawing on p. 31, water enters from the side at the midpoint of the lock through a tunnel connected with the power plant forebay. Conduits in the tunnel turn upstream and downstream on the longitudinal centerline of the lock under the floor. Branches off these conduits at intervals let the water into the lock.

Model studies indicate that this filling systems can raise the water level in the lock at the unusual speed of 5¼ ft per min, without longitudinal currents or surges.

Likewise the outlet, consisting of two conduits at the same location as the inlet, has been shown by models to operate without seething or surging. The outlet discharge is into the powerhouse tailrace channel. The lock can be emptied at the rate of 16 ft per minute, although best operation occurs in the neighborhood of 7 ft per min.

Another feature of the lock is its downstream gate, which is made only about half the height of the lock (49 ft). The upper half of the opening (54 ft) is filled by a concrete wall or apron.

The gate is semicircular—of steel plates over I-beam stiffeners. Struts at its ends, set parallel to the length of the lock, bear through spring-mounted rollers on vertical rails embedded in the lock walls. With water on both sides of the gate, these springs push the gate slightly upstream away from its bearing, so that it can be raised much like a lift gate. The gate when opened disappears behind the upper concrete apron.

The upstream gate is similar, but a flat arch in plan. This gate, however, is lowered to open, thus avoiding a high superstructure.

The lock is excavated in soft rock to about half height and then in clay. Extra thick walls (6½ ft) are used against the clay, and anchored at intervals into the surrounding ground. Total excavation for the power station-lock ensemble was 4 million cu yd, all done in the dry.

Concreting of all of this work was done by three 10.5-ton, 2,000-ft span cableways served by a central mixing plant of 400 cu yd per hr capacity. The 260-ft high cableway towers are guyed masts set about 60 ft apart transversely. They have articulated bases, and are so rigged that they can be inclined transversely (by winch lines) as much as 30 ft. Thus with the three cableways, concrete buckets can be deposited at any point in the construction area.

RUSHING IN to new basin, sea water helps cut deeper channel

Storm aids harbor completion

A SMALL HURRICANE obligingly joined its strength to that of a bulldozer and a dragline early in October, to complete the final break-through to the ocean for the new Canaveral Harbor in Florida. The storm helped take out 140,000 cu yd of sand.

The port project, being built by the Jacksonville District of the Corps of Engineers, with the Hill Dredging Corp. as contractor, consists of a diked turning basin and dock area on an inland river one mile from the sea.

Authorized in 1945, Canaveral Harbor will provide a new port facility at about the mid-point of the Florida East Coast, serving interior cities and the Air Force Missile Test Center at Banana River and Cape Canaveral. The project calls for an entrance channel 27 ft deep and 300 ft wide from Canaveral Bight; two jetties at the entrance; a turning basin 27 ft deep, 1,000 ft wide and about 1,900 ft long, enclosed by a dike; and a barge canal 8 ft deep and 100 ft wide from the turning basin to the Intracoastal Waterway, with a 50 x 250-ft lock at the inland edge of the diked area.

The initial phase of the project provides only for the large canal, turning basin and the ocean inlet. The dock will be constructed later.

As a result, a completely enclosed dike was built up around the harbor area where the natural depth of the water was only 1 to 5 ft. Three dredges on the project worked within this confined space since, once the dike was enclosed, there was no natural inflow of water to the pool.

• **The problem**—It was necessary that the dike be constructed and the beach road (Highway A1A) be routed over it before the final cut could be made into the ocean. The dike seals off salt and tidal water from the inland Banana River.

As a result of the action of two dredges depositing material ashore outside the dike area, the water elevation in the turning basin and portion of the ship channel that had been dredged was lowered to elevation −8.9 ft from mean low ocean water. The normal 3.5 ft tide gave about 12 ft head of water in the ocean at high tide. The drop in stage of the pool caused an equal increase in pumping head which imposed an excessive burden on the dredges.

It was therefore necessary to get water into the basin to equalize the water level in the ocean and the contractor elected to raise the pool by admitting ocean water.

To accomplish this, the entrance channel was dredged to full width and partial depth to within 550 ft of the ocean. Then, a bulldozer completed a shallow "V" cut across the remaining high ground (elevation +11) moving the material to spoil banks about 40 ft each side of the channel center line. Along the centerline, the bulldozer cut a pilot channel 10 ft wide, sloping from about 0 ft at the beach end to a minus 4 ft at the pool end. A plug was left at the ocean end during the dozing operation.

• **Hurricane to the rescue**—Late the same day, a dragline removed the plug at the ocean shore, and water entered on the high tide that night. The inflow during the night and heavy rains thus raised the pool to El −6.5 ft by 7:30 A.M. the following day. The rains were due to a small hurricane moving across Florida from the Gulf of Mexico, which passed to sea south of Canaveral Harbor.

A storm tide of 4.6 ft was predicted for the morning of the second day, and the completion of the cut-through was predicated on having the trench ready for this peak.

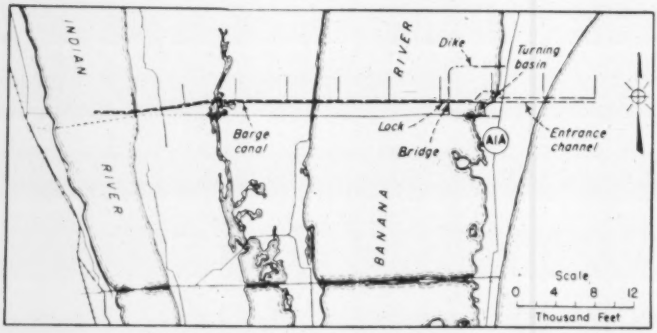
Most obligingly, a roaring current did rush through the narrow trench with each swell and wave and tumbled over and down the sloped trench toward the pool. The current increased rapidly with comparable increase in erosion of the banks.

Within about 5 hours, the current through the entrance had slowed to about 2 miles per hour, and the cut width was about 150 ft wide at the ocean and 300 ft at the pool end. Shortly after noon, the pool was full and the current began to ebb when the predicted ocean tide, then falling, was about 2 ft.

On low tide there was approximately 5 ft of water in the channel at the ocean entrance, and 10 ft about 800 ft inside the channel.

It was estimated by the Jacksonville Engineer Office that the hurricane carried out its assignment very well, removing about 140,000 cu yd of sand in a matter of four hours. Sand swept into the pool and channel is easily removed by the dredges.

Opening of the pilot trench was supervised by John D. Wells, general superintendent, Hill Dredging Corp., Ventor, New Jersey. A. H. Brown is chief of the construction division of the Jacksonville District.



ENTRANCE CHANNEL (at right) was completed with the aid of sea and storm. Project provides new Florida coast harbor.

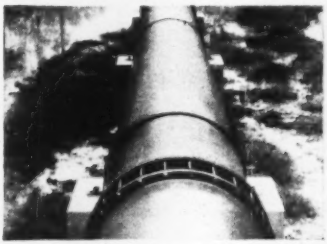
Got EXPANSION-CONTRACTION problems in the pipeline you're designing?

A 16" Dresser-Coupled water line across the Colorado River at Grand Junction, Colorado. Dresser-Coupled to assure Flexible-Tightness despite longitudinal stresses and traffic vibrations that would open a rigid line. Easily installed Dressers have given dependable service here since 1933.

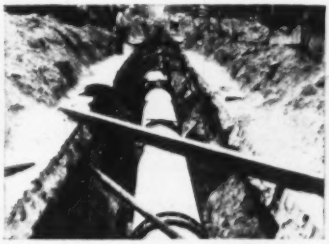
Provide an economical solution to expansion-contraction troubles in your pipeline plans. Specify a Dresser-Coupled steel line. Dresser Couplings are designed to absorb longitudinal stresses that spring leaks and build up maintenance costs on other lines. Dressers can be installed in minutes, using only a wrench, and no special skill is needed. And once installed, you have a permanent, "Flexible-Tight" line that gives years of virtually maintenance-free service.

Dresser Couplings on every joint eliminate the need for expansion joints. However, for lines subject to extreme longitudinal stresses Dresser Expansion Joints are your best solution. They're field proved for many years on oil, gas, water, gasoline, low-pressure steam, and other piping . . . and they're economical . . . easy to install.

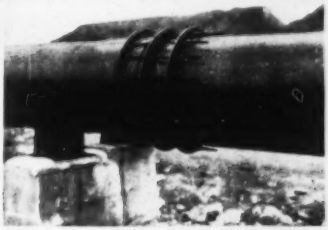
Mail the coupon below for detailed information on Dresser Expansion Joints . . . and engineering reports on recent Dresser Coupling installations.



A section of Savannah's new 42" Dresser-Coupled water line crossing swampy ground on concrete pile bents. Flexibility of couplings protects line against stresses.



Another Dresser-Coupled installation in Chicago, Ill. Dressers harmlessly absorb underground stresses beneath city streets where joint failures would be extremely costly.



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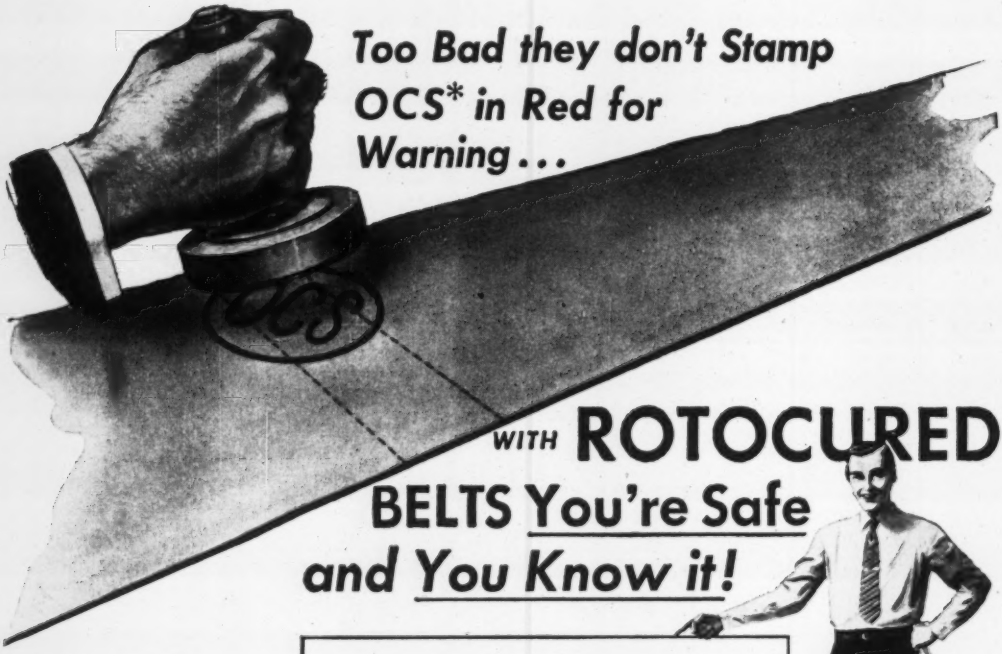

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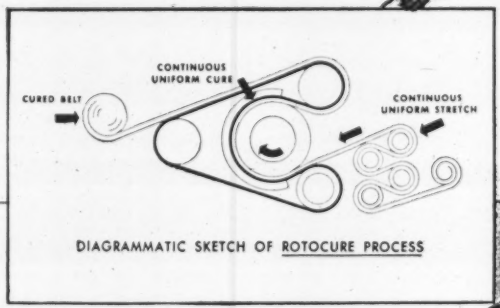

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In The BWH Rotocure Process, vulcanization is *continuous.* This eliminates overcuring and weakened segments. You get a better conveyor belt in 4 ways:

1 With no overcuring, flex life increases as much as 40%
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3 Stretch is constant, uniform
4 Covers are uniformly abrasion-resistant

These four structural advantages mean extra work hours per belt, savings per ton in what you convey and the lowest possible maintenance costs in time and dollars. Ask your BWH distributor, or write us direct.**

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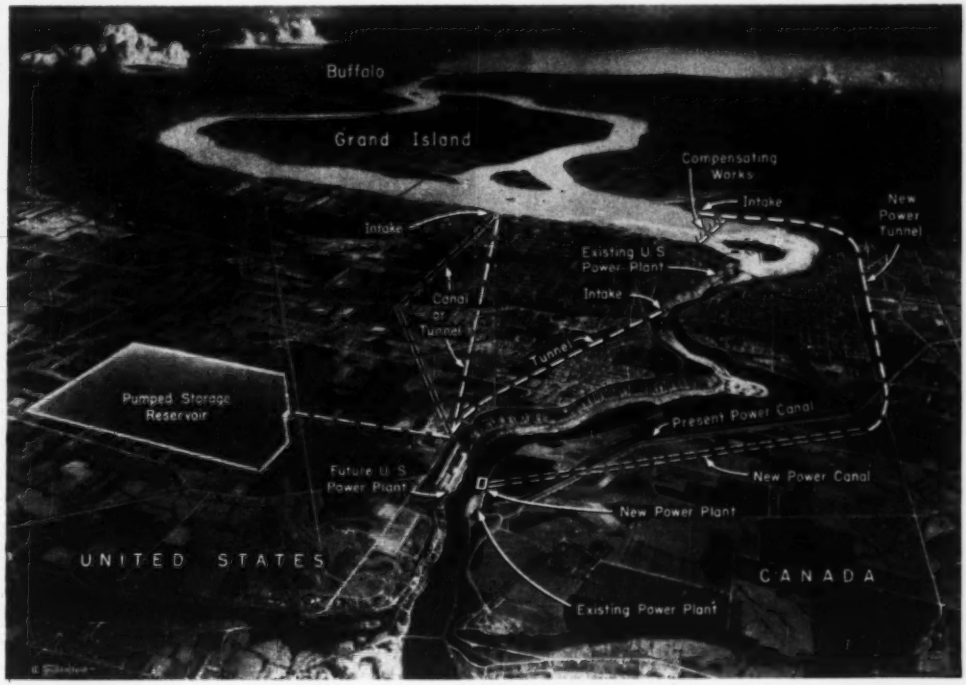


MORE HARNESS FOR NIAGARA'S POWER—New tunnel, canal, reservoir and hydro plant system whose completion would triple present power installations. Canada has her Ontario Hydro-Electric Power Commission building for her increased share of the flow, while the U. S. is still bickering over who will build the facilities for hers.

Congress holds key to more Niagara power

OUT OF THE YEARS of fumbling toward a policy for the development of the latent power in the falls at Niagara there has emerged one fact: No matter who finally does the work, Congress must grant the permission, for the 1950 treaty between Canada and the U.S. says that no project "shall be undertaken until it be specifically authorized by Congress."

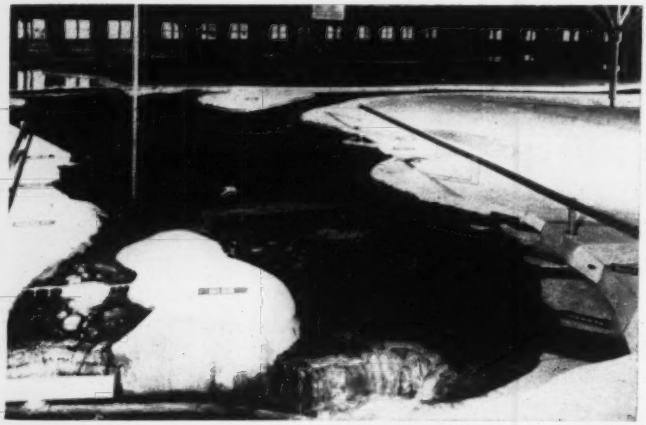
The federal government, the state of New York and the private utilities are all angling for the job. Each of the parties has a bill in Congress that it would like to see passed. Congress recessed without giving more than a nod to any of them.

The federal bill goes by the name of Lehman-Roosevelt. It stipulates federal construction, and provides for federal operation although permitting the completed facilities to be turned over to the state of New York on certain conditions. Among these conditions is the requirement that power purchase preference be given to municipalities and cooperatives. The bill also authorizes the construction of new transmission lines, and with no stipulation that they shall not duplicate existing private utility lines. Based upon the sponsors' assumption that the phrase "for the public use and benefit" in the treaty rules out the development of the power by the private utilities, the bill contemplates construction by the Corps of Engineers. Operation would be placed in the hands of the power division of the Department of the Interior in lieu of state operation.

The Ives-Cole bill has been sponsored by the New York State Power Authority. This agency was originally set up in 1931 to develop St. Lawrence power, but broadened in scope in 1950 to cover Niagara power as well. This bill also authorizes construction by the Army Engineers, but under the supervision of the state power authority which would finance the work by issuing its own revenue bonds. Operation of the power facilities would be by the state agency under license from the Federal Power Commission. Moreover, the authority would work "in partnership with private enterprise," meaning, it has been assumed, that it would sell the power to the utilities for distribution at the lowest possible cost.

The private utilities have made their offer in the Capehart-Miller bill, which, like the state power authority's proposal, provides for doing the whole job without recourse to public funds. The Niagara Mohawk Power Corp., which owns (and operates under a Federal Power Commission license) the present power generation facilities at Niagara Falls, heads a syndicate of five New York state utilities which is ready to tackle the work immediately. The bill provides for public recapture of the facilities in 1971 when the existing license runs out.

• **What's involved**—At present three U.S. plants at Niagara have a combined capacity of 525,000 kw, while the capacity of four Canadian plants of the Ontario Hydro-Electric Power Commission totals 768,000 kw. In addition, Ontario Hydro is engaged in



SMALL SCALE NIAGARA being studied by Army Engineers at their Vicksburg experiment station to determine how best to distribute water of Niagara River to preserve the scenic effect of the Falls and permit maximum diversion for power.

expanding its big station below the falls (formerly the Queenston, now the Sir Adam Beck Station) by 525,000 kw. Water is to be brought from above the Falls through a conduit consisting of 5¼ miles of 45 ft dia tunnel and a 2¼ mile canal (ENR Sept. 6, 1951, p. 39).

In the not distant future, then, the installed capacity at Niagara, both U.S. and Canadian, will total 1,818,000 kw. While this is turning out power, enough water to operate another 1,330,000 kw of generators on the American side will be going to waste because of the political stalemate.

• Plans ready—In the meantime the dismaying part of the situation is that the U.S. plans are rather well agreed upon as to the type and location of facilities that will be built. As shown on the accompanying drawing, these would include a power plant opposite Canada's Sir Adam Beck plant, fed from two intakes, one above and one below the falls. Either a tunnel under or a canal around the city of Niagara Falls, N. Y. would connect the upper intake with the power station. The lower intake would be connected to the station by a tunnel.

Since the treaty that divided the available water between Canada and the U.S. also limits the amount that can be diverted during the daylight and early evening hours (to protect the scenic beauty of the falls), the U.S. plans include a pumped storage reservoir which can be filled with water during the night. This water can then be run through the plant the next day when diversions are cut down.

The plans for these proposed facilities have been developed by the Niagara-Mohawk engineers and the New York State Power Authority. Congress in the meanwhile, under Senator Lehman's prodding, has authorized the Army Engineers to study the situation on its own. It is believed that they will come up with approximately the same scheme, with the possible addition of a long-time proposal to locate another storage reservoir above the falls on Grand Island. Such a reservoir could be kept filled with excess water over that required to satisfy scenic effects and power. The idea is that its water could supplement the day-to-day flow from the pumped storage reservoir above the power plant.

Actual U.S. construction at Niagara, it can be concluded, is still in the unknown future. And only Congress can bring this future into focus on a particular date.

• Compensating Works—In the meantime, entirely separate from the power considerations at Niagara, the Army Engineers are engaged in designing the so-called compensating works which will guide the proper amounts of water for scenic effect to both the American and Canadian falls. The total required to go over the falls is 100,000 cfs during the daylight and early evening hours from April to October, and 50,000 cfs at night. During the non-tourist season, November to March, the flow can be reduced to 50,000 cfs during all hours.

The net result of these required "scenic" flows over the falls leaves a yearly average of 130,000 cfs to be diverted for power, divided equally between the U.S. and Canada. Less than half this flow is now being utilized to generate power.

Clean streams board hits mine acids

Pennsylvania is trying hard to make its streams clean.

In recent weeks the Sanitary Water Board which has charge of the Clean Streams program took two steps: it again cracked down on coal mining operators who were not complying with the rules on discharge of acid mine waters into streams; and it started experiments to make the rules more strict.

Through the State Health Department Bureau of Engineering, the board had permits for five mines revoked, and four other cases referred to the Deputy Attorney General for possible court action.

In an experiment, the board granted permits to five operators who have agreed to strip mine coal under these rules:

1. They will save all top soil for replacement; not more than 500 lin ft of coal shall be exposed at one time.

2. They will not permit rain water to form pools near acid-forming materials within the stripping cuts.

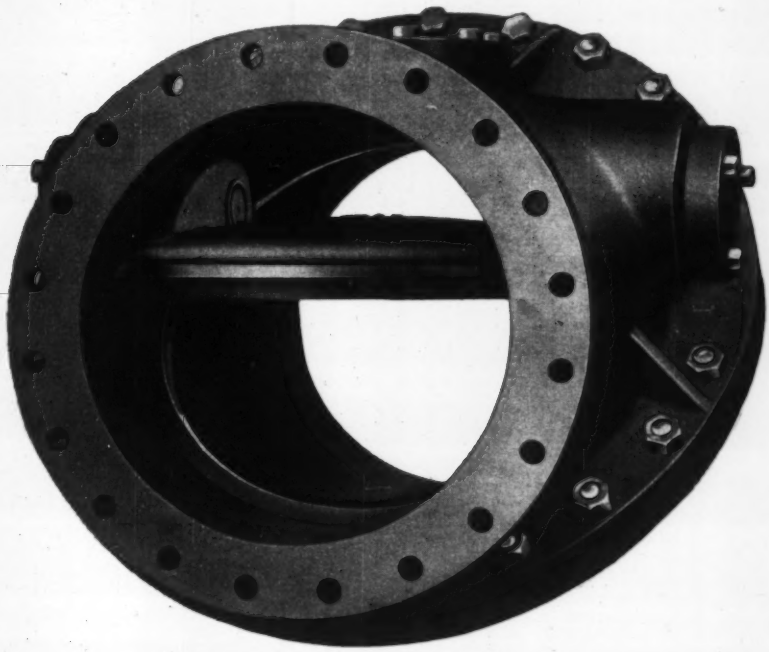
3. They will drain or pump all sources of underground water through a conduit passing through the entire stripping operation for discharge at a point of natural drainage outside.

4. They will remove all acid-forming materials they dig up to some place where it will not pollute streams; or they will keep it in the bottom of the pit close to the spoil pile where it will be covered over and compacted.

5. They will place backfill in each cut in layers not over 4-ft thick; level off and compact each layer, until the layers extend to the top of the highwall and conform to the original contour of the ground. Then they will replace and grade the top soil for the growing of trees, grasses and shrubs.

If the experiment works, the board hopes to make stronger rules to prevent discharge of acid mine water a requirement for a permit to mine.

Since the beginning of the Clean Streams program (ENR Oct. 21, 1948, page 9), the Board has received 3,084 applications for the opening of mines and for change in the methods of drainage; 2,533 have been approved and 196 have been refused. Of those approved, 43 permits have been revoked because of rules violations.

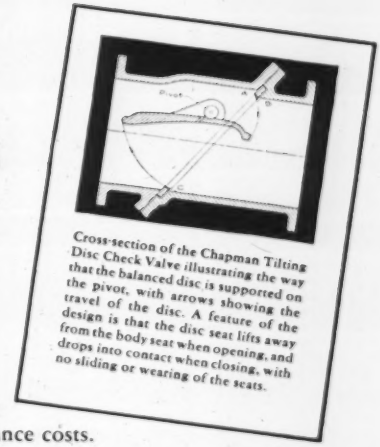


CHAPMAN

TILTING DISC CHECK VALVES

Cut Maintenance Costs

with Cushioned-Closing



Cross-section of the Chapman Tilting Disc Check Valve illustrating the way that the balanced disc is supported on the pivot, with arrows showing the travel of the disc. A feature of the design is that the disc seat lifts away from the body seat when opening, and drops into contact when closing, with no sliding or wearing of the seats.

There's less wear on seating surfaces, hinge pins and bearings with the cushioned closing action in a Chapman Tilting Disc Check Valve. No destructive slamming. No fatiguing flutter. No vibration of pipe lines or adjacent structure — nor danger of opening pipe joints or rupturing pipe lines. Just a quick and quiet closure that cuts maintenance costs.

And what's more, the balanced streamlined discs in Chapman Tilting Disc Check Valves ride smoothly on the stream—reduce head losses 65 to 80% over conventional swing type checks. You'll want to know more about this maintenance-saving, more efficient check valve. Write today for engineering data, Bulletin #30.

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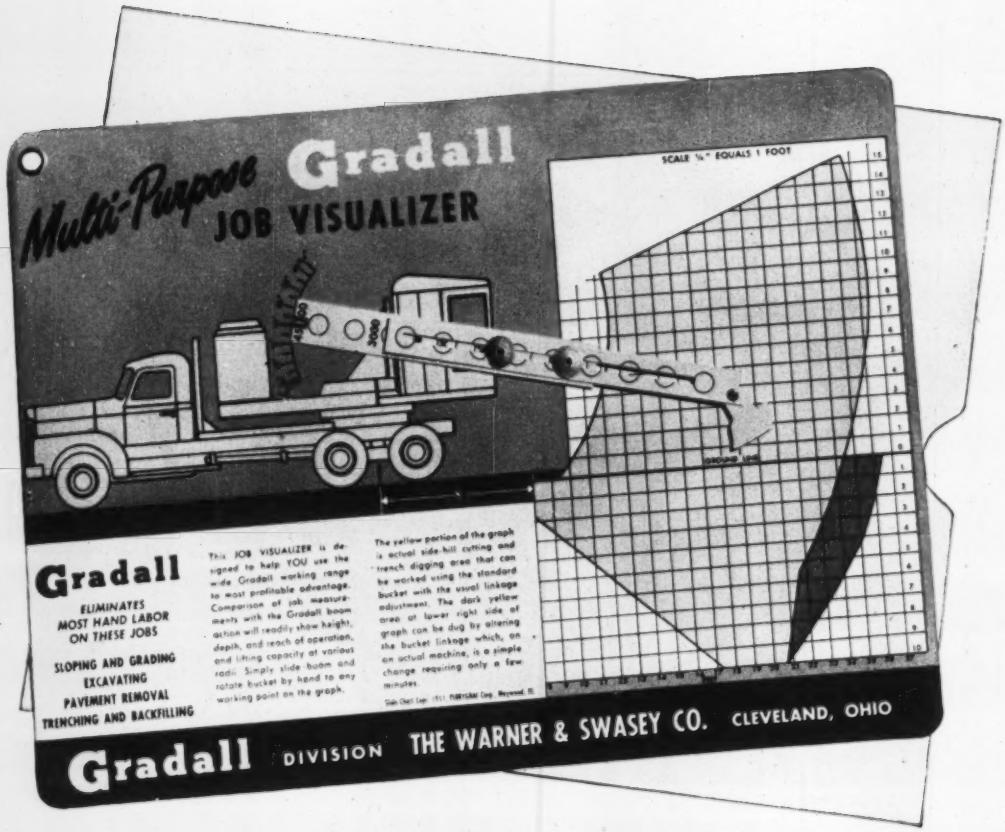
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BOOK REVIEWS

Self-help in floods

THE MIAMI CONSERVANCY DISTRICT—By Arthur E. Morgan. 504 pp. McGraw-Hill Book Co., New York 18, Toronto and London. $6.50.

Arthur Morgan's account of how the people of the Miami River valley in Ohio provided themselves with protection against a repetition of the widespread destruction caused by the great flood of 1913 comes from the presses at a peculiarly appropriate time. By coincidence, his book appears soon after another great flood in another river system—the Kaw in Kansas and Missouri—has demonstrated the need for system-wide flood planning.

To the people of the Kaw valley, still working at the discouraging task of getting rid of the slime and mud, Morgan's story will bring encouragement and new hope.

Morgan's book is an account of how the people of Dayton and other communities in the Miami valley, without any precedent to guide them and without outside help, organized a conservancy district embracing the entire river valley, taxed themselves to finance the construction of flood-storage dams and related flood-control facilities and built those structures.

It is a heartening story of self help that came to a successful climax a few months ago when the Miami Conservancy District paid off the last of its bonds.

With characteristic modesty, Arthur Morgan says almost nothing about the leading part he played in this great pioneer undertaking in unified flood control for an entire river basin.

Principles of mechanics

APPLIED MECHANICS FOR ENGINEERS—By Charles Inglis. 404 pp. Cambridge University Press, New York, N. Y., and London. $7.50.

This is a textbook suitable for students in the second or third years of an engineering course. It presumes some preliminary knowledge on the part of students of the fundamental principles of statics, theory of structures and dynamics. It also pre-supposes that readers can differentiate, integrate and solve ordinary differential equations.

Early chapters are concerned mainly with statics of rigid bodies. But this portion of the book also contains some problems in which deformation due to stress is taken into account. Emancipation from the narrow limitations of rigid-body statics is achieved in a chapter on deformations of frameworks, which deals with applications of displacement diagrams.

The chapter on theory of taut wires should be especially interesting to structural engineers, because the type of problems dealt with there are similar to those arising in the design of prestressed concrete beams. This chapter—and one on catenary problems—should also be of value to suspension-bridge engineers.

Later chapters cover dynamics, kinematics, vibration and principles of the gyroscope.

On the theory that if a student is to master statics and dynamics, he must work out many problems, the author has included a large number of examples. He also suggests that students originate problems for themselves.

Piles and pile driving

PILE FOUNDATIONS: THEORY-DESIGN-PRACTICE—By Robert D. Chellis. 681 pp. McGraw-Hill Book Co., New York 18, Toronto and London. $12.50.

Pile-driving theory and practice have come a long way since A. M. Wellington, a former editor of Engineering News, wrote in the preface to a little 150-page book "Piles and Pile Driving" that it "contains about all that can be required in any case for solving the most serious problem connected with pile driving, what load can be placed on given piles with safety." That book was made up chiefly of reprints from Engineering News, including Wellington's own formula, which by then had become known as the Engineering News formula.

Wellington's book soon became the "bible" of all engineers who had anything to do with pile foundations, just as this 681-page book by Robert D. Chellis appears destined to do.

Few books bring together the practical experience of so many engineers as does this new one on pile foundations. Mr. Chellis made a special effort to do that because "experience and developed judgment are the principal considerations in constructing pile foundations." Hence, in writing the book he undertook to synthesize such experience for the benefit of those who have not had an opportunity to develop it.

The book opens with a brief discussion of the basic principles of pile foundations and the three types of pile-driving formulas, including comment on the weaknesses of any formula.

Chapter 2 tells in detail how to use the two dynamic formulas favored by Mr. Chellis, and describes other methods that can be used to determine the capacity of piles. Following chapters cover pile hammers, driving equipment, selection of piles and methods of driving, pile grouping, types and design of piles, deterioration and preservation of piles, pile load tests and lessons to be learned from the failure of pile foundations.

A chapter that departs from the main subject, but which is a valuable addition, is one on solidification of soils by both physical and chemical means.

About one third of the book is given over to tables and appendicies, which includes complete information concerning the characteristics of all the available type of pile hammers, details of all the major formulas, test data comparing eight of these formulas, and standard specifications for piles.

Isolating vibration

VIBRATION AND SHOCK ISOLATION—By Charles E. Crede. 328 pp. John Wiley & Sons, New York 16, N. Y.; Chapman & Hall, London. $6.50.

Although this book is written primarily for engineers responsible for the proper setting of machines in industrial plants, it contains information that should be of value to the structural engineers designing buildings for such machines. Knowledge of the methods used to isolate reciprocating machines, punch presses, etc., might be a determining factor in deciding on the type of framing for an industrial building.

Bituminous pavements

BITUMINOUS CONSTRUCTION HANDBOOK—Second edition. 281 pp. Compiled by the staff of the Barber-Greene Co. Copies can be obtained from James E. Ward, Paving Engineer, Barber-Greene Co., Aurora, Ill. $2.00.

Much practical information about bituminous paving materials and how to lay them is packed into this handbook, which grew out of compilations of data for Barber-Greene's own service men.

The book is designed to supply contractors and construction engineers with the type of information they need about the different types of bituminous surfacing, the asphalt oils, tars and aggregates used in such work, and the methods used in laying bituminous pavements. Included is information on methods for testing the principal materials going into such pavements and for preparing different types of paving mixes. Summaries of the specifications

of the Public Roads Administration, American Association of State Highway Officials, American Society for Testing Materials and Asphalt Institute also are given.

Obviously, the equipment for preparing aggregates, mixing and laying bituminous paving materials that is described in the book is Barber-Greene equipment, but that in no way detracts from its usefulness.

In the back of the book are tables that will be especially useful to highway engineers, such as square yards of road surface for various road widths, storage capacities of piles of various height and length, and the amount of road surface covered by one yard of aggregate for different road widths and depths of spread.

Notes on Pamphlets, Reprints and Educational Films

• **Buckling of columns**—A paper on the buckling of columns by Mirko Ros, which summarizes research into that subject during the past 25 years at the Federal Laboratory for Testing Materials at Zurich, Switzerland, has been translated by the Column Research Council. Copies can be obtained at a cost of $1.00 from Lynn S. Beedle, Fritz Engineering Laboratory, Lehigh University, Bethlehem, Pa.

• **Surveying problems**—A new edition of "Review Questions for Surveyors" has been issued by Russell C. Brinker, Department of Civil Engineering, Virginia Polytechnic Institute, Box 323, Blacksburg, Va. This one contains 1,575 questions (according to the author's count) as against 1,313 in the earlier edition. Price $2.00.

• **Soil mechanics**—Five foreign-language papers on subjects relating to soil mechanics have been translated by the U. S. Geological Survey and copies are on file in Rooms 1033 and G-206 in the General Service Building, Washington, D. C., and in Room 468 in the New Customhouse, Denver, Colorado. A limited number of copies of the translations have been mimeographed and can be obtained from the Director, U. S. Geological Survey, General Services Building, Washington 25, D. C. as long as they last. The papers are as follows: No. 21, Application of Electro-Osmosis to the Execution of Certain Works on Water-Bearing Soils; No. 22, Soil Silicification; No. 23, Determination of the Angle of Internal Friction and of the Cohesion of Soils in Situ by Means of Dynamic Drilling; No. 24, Electrical Treatment of Plastic Clays; No. 25, Device for the Rapid Test in Situ of the Resistance of Foundation Grounds.

• **Protection against atomic attack**—Air-raid experience in World War II, with minor modifications, can be applied to protection of personnel, buildings and equipment against atomic warfare, according to an 82-page report made to the National Industrial Conference Board. Published in pamphlet form under the title, "Damage Control in Wartime," the report covers in detail the best in European experience in defending against air attacks and indicates how this may be applied here. It deals with organization and training of personnel, strengthening of structures, installation of protective devices and dispersal of structures and facilities. Copies are available at $3 each from the board's office, 247 Park Ave., New York 17, N. Y.

• **Rates for water and sewer service**—Rate structures for water and sewage services are of special importance today for two reasons: Increased costs have brought many recent rate rises, and increased numbers of industrial users have introduced complexities. All those faced with the problems of what to charge for water and how to charge for sewage service should welcome "Fundamental Considerations in Rates and Rate Structures for Water and Sewage Works," which has been reprinted from the Ohio State Law Journal. This is a joint report of committees of the American Society of Civil Engineers and the section of municipal law of the American Bar Association, plus representatives of six other groups. As the fruit of three years work, the report recognizes that most existing rate structures are unsound and sets forth the joint group's views on how utilities should compute fair water and sewage rates. Recommended procedures are illustrated with hypothetical examples. The 125-page reprint is available from ASCE headquarters, 33 W. 39th St., New York City, for 75¢.

• **Indiana's water resources** have been described fully for the first time in Bulletin Number 1 of the state's Flood Control and Water Resources Commission. This 137-page booklet is the result of much original study into all factors affecting supply and availability of both surface and ground water. Tabulations of water quantities, description of water quality and discussion of trends in water use are presented. In summary, the report sets forth the need for more stream gaging stations, more ground water recorders and a coordinated study of water quality. Sedimentation studies in existing reservoirs and topographic maps of further areas are other needs cited.

Concurrent with publication of Bulletin Number 1, the commission produced Circular No. 1, which is a map of north central Indiana, showing as contours the thickness of glacial drift over the area. Both the bulletin and the map may be had without charge from the commission at 37 State Board of Health Building, 1330 W. Michigan St., Indianapolis, Ind.

New Engineering Books

PILE FOUNDATIONS: THEORY-DESIGN-PRACTICE—By Robert D. Chellis. 681 pp. McGraw-Hill Book Co., New York 18, Toronto and London. $12.50.

CORROSION, CAUSES AND PREVENTION—Third Edition. By Frank N. Speller. 686 pp. McGraw-Hill Book Co., New York 18, Toronto and London. $10.00.

AN ELEMENTARY TEXT IN HYDRAULICS AND FLUID MECHANICS—By Ralph W. Powell. 316 pp. The Macmillan Co., New York 11, N. Y. $4.75.

BUSINESS AND PROFESSIONAL SPEECH—By Lionel Crocker. 463 pp. The Ronald Press Co., New York 10, N. Y. $4.00.

THE MIAMI CONSERVANCY DISTRICT—By Arthur E. Morgan. 504 pp. McGraw-Hill Book Co., New York 18, Toronto and London. $6.50.

DESCRIPTIVE GEOMETRY: A PICTORIAL APPROACH—By Harold Partlett Howe. 332 pp. The Ronald Press Co., New York 10, N. Y. $4.00.

MANPOWER RESOURCES AND UTILIZATION: PRINCIPLES OF WORKING FORCE ANALYSIS—By A. J. Jaffe and Charles D. Stewart. 532 pp. John Wiley & Sons, New York 16, and Chapman & Hall, London. $6.50.

TERRAZZO & MOSAIC—ARCHITECTURAL AND DESIGN DATA—136 pp. The National Terrazzo & Mosaic Association, 711 14th St., Washington 5, D. C. $10.00.

DESIGN OF INSULATED BUILDINGS FOR VARIOUS CLIMATES—By Tyler Stewart Rogers. 119 pp. Architectural Record, 119 West 40th Street, New York 18, N. Y. $5.50.

STATISTICAL METHODOLOGY REVIEWS, 1941-1950—By Oscar Krisen Buros. 434 pp. John Wiley & Sons, New York 16, and Chapman & Hall, London, $7.00.

STEEL SERVES THE NATION, 1901-1951—The Fifty Year Story of United States Steel—By Douglas A. Fisher. 227 pp. U. S. Steel Corp. 71 Broadway, New York 6, N. Y. (Limited edition)

READER COMMENT

Flood stories

Sir: Congratulations on the fine job Engineering News-Record did in connection with the great Kansas and Missouri rivers floods.

J. Roland Carr's articles were based on sound information and solid facts, a refreshing contrast to some of the misleading information printed in other publications concerning what happened in the worst flood disaster in the Missouri Basin. Stories such as those appearing in your publication will, I am sure, do much to clarify the thinking of those in the Missouri Basin responsible for flood control, as well as of the people in the areas who in the past often have had little true concept of the problems involved.

KENNETH P. MIDDLETON
Chief, Technical Information
Missouri River Division
Corps of Engineers
Omaha, Nebr.

For safer driving

Sir: The many points to improve safe driving on the Pennsylvania Turnpike, as printed in the article, "Are Toll Highways Accident Breeders"? (ENR Oct 18 p 30) are all worth careful consideration. Nothing was mentioned, however, about preventing accidents at the two primary sources of trouble, which are deficient drivers and mechanically defective vehicles.

Acclimation or hypnotism to constant high speed, fatigue, poor visibility, slippery pavement, the air wash movement when passing trucks and other obstacles are all secondary causes resulting from a driver losing the sense of good judgment in the distance required for deceleration and braking. The driver generally suffers a momentary nervous breakdown which freezes him stiff to the wheel instead of being physically relaxed and alert to react to sudden changes in driving conditions.

A three to five minute delay at an inspection station, before entering the toll gate, for the purpose of examining tires, brakes, lights and other pertinent points on the vehicle, while at the same time checking the alcoholic breath, heart, vision and general physical structure of a driver may save many lives and fully justify the expense. Some cases would justify "grounding" the car or driver. Others may be permitted to proceed on a restricted speed to be assigned by the chief inspector and marked with a metal plate quickly attached next to the license plate. Another driver approaching a vehicle with a large black and white 40 or 50-mph plate hanging on the rear will proceed with caution before passing.

Some may feel that a rigid inspection and physical examination may reduce the income. Temporarily this may be true, but with the publicity support from the insurance companies it would improve income in the long run. A qualified car and driver can continue to travel the Turnpike at 70 mph without becoming a hazard to others and without having the fear of other incompetent drivers or defective cars becoming a sudden road block in front of him.

It must be remembered that there are many Pennsylvania drivers who were licensed before it was necessary to pass a physical examination and eye test. Some of these drivers are now half blind, but they insist on "high balling" down the turnpike.

It must also be remembered that not all of the states require semi-annual vehicle inspection. These cars, whether good or bad also travel down the turnpike at 70 mph until they throw a wheel.

The zoning lights being tested by the Turnpike Commission will serve a good purpose to alert drivers when inclement weather or ice creates a hazard.

The only other hazard is poor visibility and eye fatigue when traveling top speeds during night driving. It is assumed that these hazards are under consideration for improvement in the near future.

JOSEPH G. CONRATH
Consulting Engineer
Erie, Pa.

EDITOR'S NOTE—The subjects of deficient drivers and mechanically defective vehicles were purposely omitted from the discussion, as they bear no relation to the design of limited-access highways.

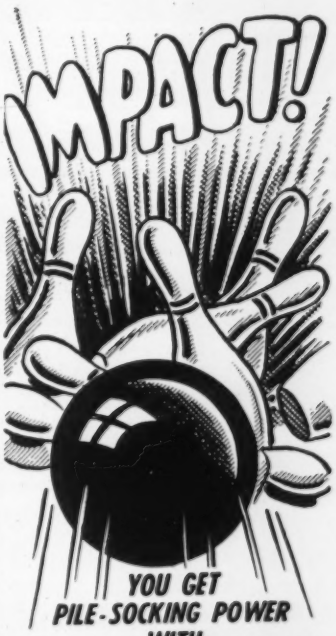
Anti-bacterial cement

Sir: In reference to an article in ENR Oct. 18 p. 11, captioned "Cement checks bacteria":

Messrs. Knapp and Amberg were formerly employees of this corporation.

Anti-Bacterial Cement is patented and manufactured by North American Cement Corporation. The various uses mentioned in your issue of October 18 are correct.

THOMAS J. HARTE
President
North American Cement Corp.
New York City



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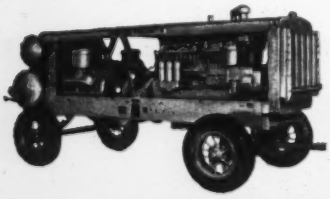

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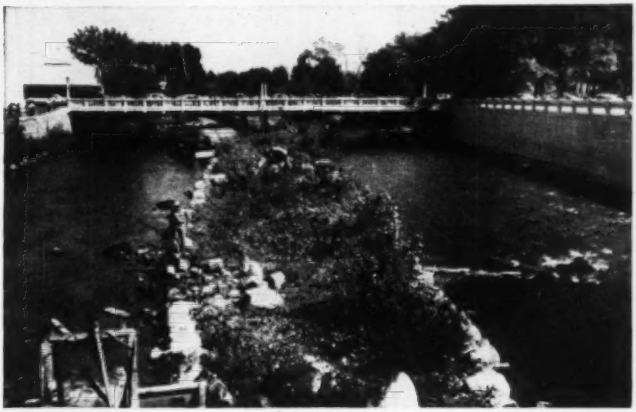

ISLAND REMOVAL—A man-made scenic island which divided the flow of the Truckee River through part of Reno, Nev., has been removed by the Corps of Engineers, to help avert the kind of floods that soaked the city last November. Constructed in 1936 by WPA workers, the island then had fountains, walkways and lights, but as time went on it fell into disrepair. At periods of high water it would be inundated, and when flood conditions came, it occupied space badly needed for water. The Corps of Engineers, using bulldozers and skip loaders, pushed the island to the north river bank where it was loaded onto trucks and moved to a recreation ground in the north part of the city that needed earth fill. About 3,500 tons of earth and 5,250 tons of rock were moved in three working days.

Opposition delays San Jose sewer plan

An enlarged sewage disposal system for San Jose, Calif.—delayed for years by unsuccessful attempts to coordinate disposal plans of surrounding communities, and finally approved early last year in a second try on a bond issue proposal vote—may be running into a new block.

The city's condemnation suit to obtain 2,500 acres of marshland necessary for five oxidation ponds for secondary treatment is being vigorously contested by Leslie Salt Co., which owns most of the desired land. Leslie uses the land to produce salt from San Francisco Bay water by the evaporation process.

The salt company declares that only primary treatment is necessary, and that the city should make "proper use of the natural purification capacity of the bay." It labels the San Jose plan "experimental," pointing out that the oxidation system has never before been tried on such a large scale, and claims the lagoons would create a "health menace" and a "mosquito and odor problem."

It also contends that the $3,900,000 bond issue approved by city voters won't pay for the planned installation.

Engineers supporting the Leslie stand include W. J. O'Connell and Clyde C. Kennedy, both San Francisco consulting engineers.

The San Jose plan, designed by consulting engineers C. G. Hyde and G. L. Sullivan, associated for the project, calls for a secondary treatment plant using the five oxidation ponds, covering 2,000 acres, and involving recirculation of water through four pumps at a rate of 280 mgd.

In defense of this plan, Sullivan told the court that the chosen system was the only one economically practical for efficient dealing with the city's problem, which is complicated by booming industrial growth and by seasonal peaks of sewage wastes from local canning plants.

Sullivan noted that when he surveyed the desired marshlands in 1945 no salt ponds were in existence.

Also testifying in support of the Hyde-Sullivan plan was Victor M. Ehlers, chief engineer of the bureau of sanitary engineering in the Texas State Health Department. He declared that secondary oxidation treatment was essential before discharge of the city's sewage into bay waters, asserting that the strong ebb and flow of tides would shuttle partly-treated sewage back and forth at the discharge.

Chester Gillespie, retired chief sanitary engineer of the California Depart-

(Continued on page 48)

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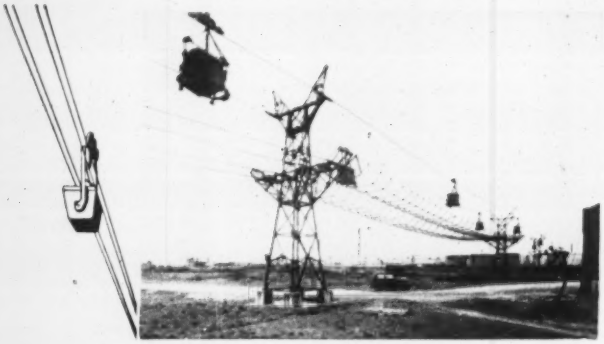

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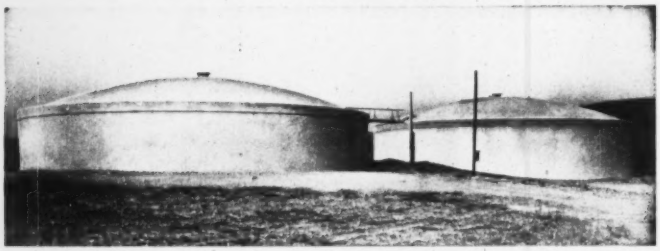

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ment of Public Health, favored the oxidation pond method as better able to stand the shock of an overload than trickling filter or activated sludge plants.

Court hearing of the condemnation suit is expected to continue.

Small house building code promulgated in N. Y. State

The New York State Building Code Commission has promulgated a state building code, effective last Nov. 1, and applicable to one and two-family dwellings.

The code, on which public hearings were held early in October, is being promulgated without change in the draft distributed in September to 6,000 municipal and state officials, the officers of construction industry associations, and allied groups. It is formulated in terms of "performance objectives," as required by the law. This is a sharp departure from specification codes in general use in about 350 municipalities in the state, and in approximately 2,000 municipalities in other states. Specification codes have been criticized by code authorities on the ground of their inflexibility, difficulty of amendment, and failure to keep abreast of developments in the building industry.

An interpretive guide is to be issued later, and the commission announced that it has started preparation of a multi-family dwelling code, and plans promulgation next year. Following that, the commission will undertake the preparation of a comprehensive code, covering all types of building. In this way municipalities will be afforded complete code services. The codes will be maintained up-to-date by the commission, thus freeing municipalities of the burden and expense of drafting, promulgating, amending and otherwise servicing an individual local code.

The Committee on Building Code Uniformity of the Home Builders Association of Westchester, Inc., Mount Vernon, N. Y., in a report announced by Frank P. Tufaro, president of the organization, has urged the adoption of the program of the State Building Code Commission by all municipalities in the Westchester County (population almost 600,000) in order to eliminate deficiencies and lack of uniformity in the 37 different codes now in force in the county. The report, prepared under the chairmanship of James E. Cook, sets forth advantages to the municipalities, industry and the general public in adopting the state's program.

Municipal Briefs

• **Patuxent River dam wanted**—The Washington Suburban Sanitary Commission has applied for authority to build a $4,500,000 dam and reservoir on the Patuxtent River at Rocky Gorge. The proposed dam would be 1½ miles northwest of Laurel, Md., and 13 miles downstream from the present Brighton Dam. Harry Shaw, chief engineer for the sanitary commission, told the Department of Geology, Mines and Water Resources that the new water supply is needed to augment present supplies for Washington suburban communities in Prince Georges and Montgomery counties in Maryland.

• **Bridge not needed**—A proposed bridge across the Mississippi River connecting the villages of Cahokia, Ill., and South St. Louis, Mo., would not be justified by the amount of traffic which would use it, according to a report made by H. W. Lochner & Co., Chicago. The firm said that if any new bridge were to be built it should be immediately south of the MacArthur Bridge to relieve congestion of cross-river traffic between St. Louis and East St. Louis and Belleville. Cahokia is well known as the site of mounds built by the ancient Mound Builders.

• **Miami is well connected**—Recent opening of the new Broad Causeway now gives residents and visitors to Miami, Fla., a choice of five causeways and a bridge for getting to the beach from the mainland.

• **Birthday gift to Detroit**—The 250th anniversary building fund of Detroit, Mich., on Oct. 12 was increased $1,000,000 by a gift of that amount from the General Motors Corporation. A gifts committee is campaigning to raise $8,500,000 to pay half the cost of a new convention hall and a new Wayne University community arts building. Previously the Ford Motor Co. had given $900,000 toward the fund.

• **Baltimore's 1952 street program**—A $3,200,000 pay-as-you-go program of new construction and rehabilitation of streets and highways for 1952 has been approved by Herbert Fallin, budget director of Baltimore, Md. The program, which needs authorization by the Board of Estimates, calls for $1,000,000 for arterial streets and express highways; $1,200,000 to continue blacktop resurfacing and other major rehabilitation; and $1,000,000 to be matched by an equal amount to be put up by private builders for streets in new residential developments.

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INTERNATIONAL

Brazil started on major power plan

With initial civil engineering work and some preliminary construction now well under way, Brazilian engineers are predicting that another 18 months should see the first 60,000 kw. generators go into service at the Brazilian government's Paulo Afonso Falls hydro-electric station.

The project, long a dream to bring power on a TVA scale to the valley of the Sao Francisco River to serve areas in five central Brazil states of Bahia, Sergipe, Pernambuco, Alagoas and Paraiba.

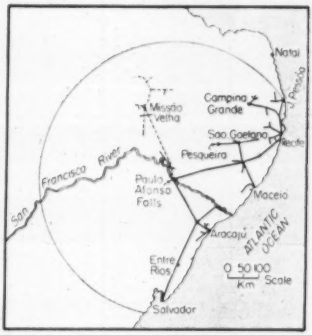
Contracts have already been let for line equipment to a total of $14,000,000 and for sub-station equipment; a new city, with a population of 10,000, has been created at the main project site; some access roads have been built and some work has been done in preparing a dam site.

• **The plan**—Brazil has eyed Paulo Afonso falls as a source of power for decades, but its remote position on the river (roughly 250 kilometers inland on the Atlantic Ocean) has precluded any action. However, in 1946 the writers of a new Brazilian Constitution inserted a section requiring the government to carry out within 20 years a program for the development of the valley. The provision provided that no less than 1 percent of the annual federal tax revenues be spent for the purpose.

Out of this legislation arose the Cia. Hidro-Eletrica do Sao Francisco, charged with development and transmission of electric power from the falls. CHESF had an initial capital of $20,000,000, which was raised this year to $40,000,000. Forty-nine percent of this amount is common shares underwritten by the Federal government, the balance is in preferred shares taken up by the governments of four of the five states, several municipalities and government-run social security institutes. Additional finance has been provided (in 1949, see ENR, Oct. 20, 1949, p 47) by the International Bank for Reconstruction and Development to the amount of $15,000,000.

• **Series of falls**—Paulo Afonso is in actuality not one fall, but a series of falls and rapids, with a total drop of about 90 meters in the course of 6 kilometers. Creation of a reservoir on the river at this point would afford a power head ranging from 84 meters at maximum water level to 79 meters at minimum.

The river flows from south to north



and then swings southeast, rising not far from Balo Horizonte, capital of the State of Minas Gerais, and running some 3,200 kilometers to the sea. More than half of the main stream and 1,200 kilometers of its tributaries are navigable. The river has a minimum flow of 800 cubic meters a second and the greatest flood saw 16,700 cms at the falls.

• **In Stages**—Three stages are planned in development of generating facilities, all involving excavation of pressure shafts and power houses in the solid granite rock at the site. All civil engineering is being carried on directly by CHESF on its own account.

Stage 1 (now under way) involves preparation of the dam and construction of an underground generating station with facilities for three 60,000 kw. generating sets. Stage 2 calls for construction of two pairs of 90,000 kw. generators, and Stage 3 would raise capacity to a total of 900,000 kw.

In the course of building Stage 2 and 3, balancing and controlling reservoirs would be built higher up the river to stabilize flow. The initial dam would be, in reality, a diversion structure, the lake it creates having about 18 square kilometers of surface area, but being only 10 meters deep at the entrance to the pressure shafts.

The diversion structure will actually be two converging dams; one, 3068 meters long across the river and another 1147 meters long acting as a dike to keep the water from spilling into flatlands to the west. The east dam, the longer one, has more than 46,000 cu.ft. of concrete poured into it to date, and is about one-third complete. It will have a spillway crest 2500 meters long and four sets of sluice gates, the spillway being designed to pass 11,000 cubic meters a

(*Continued on page 54*)

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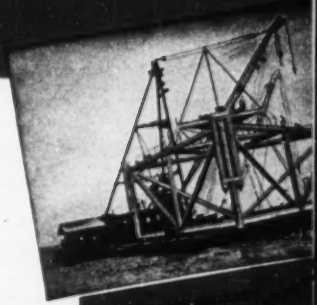

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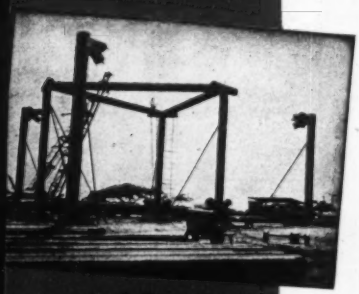
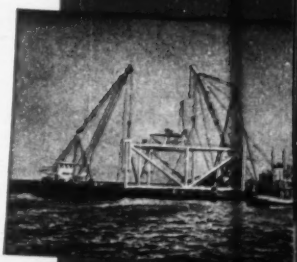
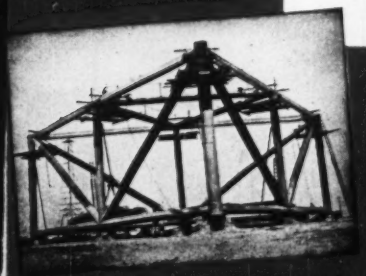




The Moral: When the problem is tough, the answer must still be *right*. That's when it pays to have a resourceful, experienced organization on the job . . . like Raymond!



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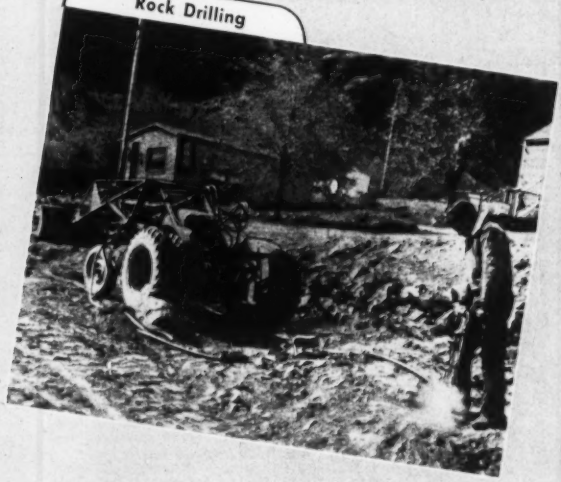
Drilling Anchor Holes with an auger air-powered by mobile Tractair saved a utility company $18,000.

Secondary Drilling on a mountain highway relocation and grading job is made easy with Le Roi-CLEVELAND sinkers and self-propelled air-power from Tractair.

Rock Drilling



Patching Pavement is done easily and quickly with a Le Roi-CLEVELAND Patcher designed to mount on the rear platform of a Tractair. This unit made exclusively by Le Roi-CLEVELAND, drills closely spaced holes within a 7-foot radius, then broaches the section of pavement loose for easy removal. On this job, the bricks were removed just to get to the pavement underneath. Tractair's 105 cfm provides ample air-power to run this money-saving tool.

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Moreover, Tractair can be equipped with a sturdy front-end loader having eight quickly interchangeable accessories. When so-equipped Tractair handles loading, lifting, back-filling, and snow-plowing in addition to its other duties.

That's why Tractair's the buy for money-saving usefulness. And you cut costs further still when you team Tractair with Le Roi-CLEVELAND air tools. Job data-sheets and bulletins showing how Tractair saved money for others are available upon request. Write today.

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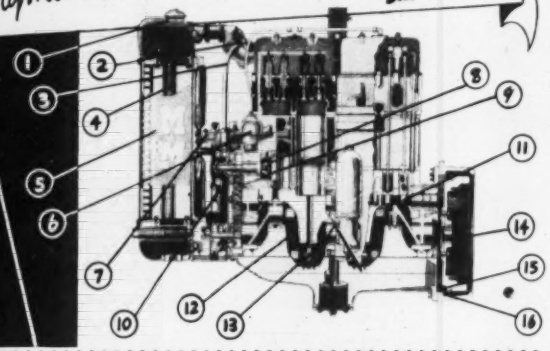

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second and the sluice gates 10,000 cubic meters a second.

Maximum height of the dams above foundations will only be 22 meters, and average height is about 8 meters. On the west dam, the dike, more than 54,000 cubic meters of concrete has been placed, and work is nearly 95 percent complete.

• **Underground Power**—The underground power station will be located at the convergence of the two dams. It will be supplied by three pressure shafts initially, although four more such shafts could be built in the future.

Total drop of these shafts will be 79 meters, 50 of it directly vertical followed by a 90 deg. curve into the underground installations. All three of these shafts have been driven and concrete work is now nearly 40 percent complete. After lining, the insider diameter of the shafts will be 4.8 meters.

The underground power station itself will be 58 meters long, 15 meters wide and 13 meters to the top of its arch ceiling. The proposed additional generating units would be located in larger caverns at either side. The present cave is 40 percent excavated and concrete lining of the roof has been started.

Water discharged from the turbines will converge into underground tailraces 10 meters in diameter and 172 meters long.

To date, the combined underground work has involved removal of 30,000 cubic meters of granite.

• **Transmission System**—The station will supply two 220 kv power lines, one running south about 450 kilometers to Salvador in Bahia state, and also supplying Sergipe state. The other trunk line will run 400 kilometers northeast to Recife, in Pernambuco state and will also supply Alagoas and Paraiba state.

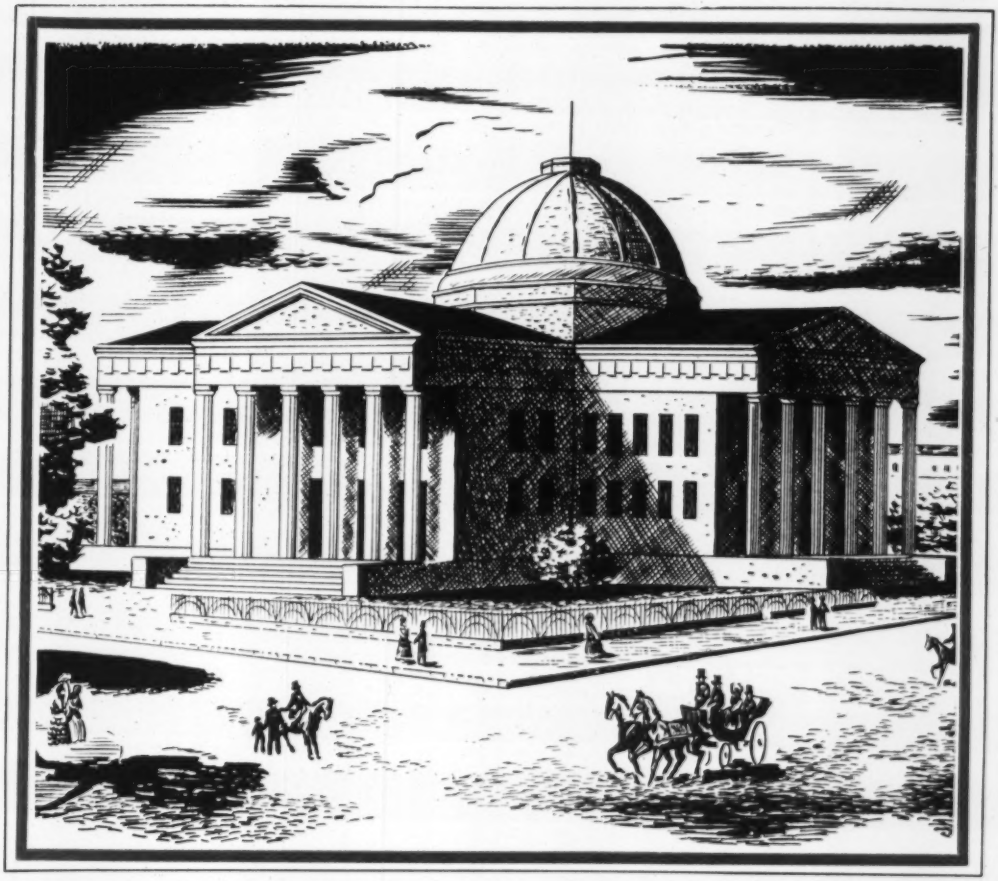
The high-lines will be built along traditional lines, with average height of towers being 24 meters, towers located 450 meters apart. Construction of this phase of the project has been let to Morrison-Knudsen of Brazil, a subsidiary of the U. S. construction firm.

Completion of the project is expected to have a tremendous effect on the now predominantly agricultural nature of the economy of the area.

International Notes

• **Cuban tunnel**—The construction of a tunnel under the Almendores River to connect Havana and Marianas has

(*Continued on page 56*)



The old courthouse in St. Louis as it looked 100 years ago

St. Louis, Missouri has a cast iron water main in service that was installed more than 100 years ago. That is not surprising as St. Louis is one of our oldest cities, founded by the French and taken over by the U. S. A. with the Louisiana Purchase. Yet this old main is still withstanding the traffic shock and beam stresses imposed by multi-ton trucks and congested underground utility services in a great manufacturing city. More than thirty other American cities have cast iron water and gas mains in service that were installed over a century ago—indisputable testimony to the strength factors of long life inherent in cast iron pipe.

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International . . . .

been started by the Commission de Fomento Nacional. It will cost about $5,500,000. Up to now, the wooden bridge Puente Pote, constructed by Autobus Modernos, has served to connect the two places but there is serious traffic congestion on the bridge. The tunnel will have two lanes and will be more than five blocks in length over all.

• **Israeli developments**—The first $5,000,000 realized from the Independence bond issue of the government of Israel has been made available. From Tel Aviv a breakdown of the investments of bond proceeds totaling exactly $50,212,000, was given as follows:

$13,060,000—For industry and mining, including the exploitation of large peat-deposits in the Huleh area (Northern Israel), and the preparatory stages in the extraction of phosphates, caolin, glass, sand, copper, manganese and bituminous limestone.

$10,100,000 for the development of electric power, including the purchase of two generating units.

$12,128,000 for agricultural expansion and irrigation schemes.

$5,734,000 for transport and communications, including the extension of railways and new harbor facilities at the Kishon River (near Haifa).

$6,250,000 for housing schemes in industrial areas.

$2,940,000 for the expansion of existing hotels and the erection of new ones.

• **Fulbright lecturer for France**—Theodore von Karman, director of the scientific advisory board of the U. S. Air Force, and the only living honorary professor at Columbia University, has been awarded a Fulbright grant to lecture in France for the current academic year. Dr. von Karman, who was named to the honorary Columbia post after delivering a special lecture series at the university in 1947, will serve under his grant as a visiting lecturer in fluid mechanics at the University of Paris. A distinguished aerodynamics authority, he is best known for his work on the problems of supersonic flight and his theories of vortex motion and turbulence in fluids. Last year he was awarded the Kelvin Gold Medal, one of the highest international awards in engineering.

Is the steel you need loafing on your scrap pile?

MEN AND JOBS

NEW PARTNERSHIP—A new partnership in the general contractor's field has been formed at 272 Brannan St., San Francisco, known as Rothschild, Raffin & Weirick, successors to Haas & Rothschild. They are retaining their original organization, with the addition of Mr. Raffin. Robert B. Rothschild, Jr., left, was partner of the former firm which built more than $20,000,000 worth of buildings, sewage plants, canals, bridges and other heavy construction projects in the last seven years. Bennett L. Raffin, center, has been with Barrett & Hilp, Contractors, for the last five years. He was graduated from Stanford University in 1938 in civil engineering. L. Don Weirick, right, was general superintendent in charge of all construction of the old firm.

New Appointments

Highway departments

D. I. McCullough has been made bridge engineer of the Oklahoma highway department, succeeding the late Homer X. White. He has been with the department 28 years.

William W. Vaughan is now assistant maintenance engineer Oklahoma highways.

State, city and county

Joseph C. Cressy is now traffic engineer of the Massachusetts Department of Public Works.

Ralph Speer, formerly city engineer for Iron Mountain, Mich., has been named city manager of Sault Ste Marie.

Nelson H. Baker has been appointed civil engineer in the Parks Department of Buffalo, N. Y. He has been in the department for 30 years.

Earl C. Hubbard, Raleigh, N. C., head of the division of sanitary engineering of the North Carolina State Board of Health, has been named executive secretary of the North Carolina State Stream Sanitation Committee, to take office Jan. 1.

John Stauss, 1949 graduate University of Wisconsin with both B.S. & M.S. degrees, has been appointed city engineer of Kaukauna, Wis.

Harold M. Lewis, of New York, authority on planning, has been retained by the New Castle County, Del., Zoning Commission to make a survey of land use in the county.

George A. Hall is engineer-secretary of the new Ohio Water Pollution Control Board.

Industrial and Commercial

Albert C. Ringelstein, formerly with Thompson-Starrett Co., Inc., as project manager, U. S. Naval Hospital, St. Albans, N. Y. is now with John W. Harris Associates, Inc., New York.

Joseph N. Myers is now technical consultant to the Bituminous Concrete Producers Association. He retired from the N. Y. State Public Works Department Oct. 1 after 45 years.

Government agencies

Robert R. Peck, formerly agricultural engineer, U. S. Conservation Service, is now an engineering draftsman with the public works department of Naval Aviation at the Ordnance test station, Chincoteague, Va.

Victor J. Janda has been promoted to assistant chief engineer appraiser of the Farm Credit Administration, Washington, D. C., effective at once.

Dr. Joseph W. Mountain is now chief of the Bureau of State Service, Public Health Service, succeeding **Dr. C. L. Williams,** retired after 40 years.

Bureau of Reclamation

J. D. Hancock, hydraulic and civil engineer, has left for a year's service with a Point 4 Program regional mission in the Middle East, concerned with developing natural resources of Lebanon, Syria, Jordan, Iraq, Iran and Egypt.

Consulting engineers

Oliver W. Swain, formerly with Hankins, Trapnell & Anderson, Richmond, Va., and **Robert L. Sharpless,** formerly with Toledo Scale Co., have joined the staff of Delos M. Palmer & Associates, consulting engineers, at 4401 Jackman Rd., Toledo, Ohio.

Raymond J. Rosenberger, formerly in charge of the contract and specification department of Gannett, Fleming, Corddry & Carpenter, Inc., Harrisburg, Pa., is now engineer of specifications with the J. E. Greiner Co., 1201 St. Paul St., Baltimore, Md.

Honors

The New York State Association of Architects has announced that, among others, **Isadore Rosenfield,** architect, 23 West 47th Street, New York City, won the "Award for Distinguished Achievement in Professional Practice" because of his design of the North Shore Hospital at Manhasset, N. Y., and a like award for the Ponce Hospital Center at Ponce, Puerto Rico.

John F. Hennessy of Syska & Hennessy has been elected president of the New York Association of Consulting Engineers. Colonel Hennessy, whose firm is currently designing mechanical engineering installations for the United Nations project, succeeds William Eipel of Tuck & Eipel. Burnside R. Value of Seeley, Value & Stevenson was elected vice-president. Donald W. Christie was elected secretary and Harry C. Bond treasurer.

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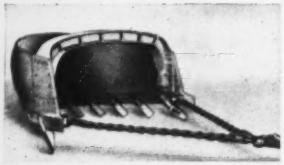

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EDUCATION, RESEARCH

Highway research council set up in Illinois

Establishment of an Illinois Highway Research Council has been announced by Charles P. Casey, director of the state Department of Public Works and Buildings. Consisting of technical representatives of highway agencies, it will act in an advisory capacity to Frank N. Barker, chief state highway engineer, in connection with the rehabilitation of Illinois' 12,000-mile system of primary highways.

Thirteen members have been appointed by Barker to two-year terms. They are: W. L. Esmond, engineer of research and planning, Illinois Division of Highways, chairman; Ellis Danner, professor of highway engineering at the University of Illinois and director of the Illinois Cooperative Highway Research Program, vice-chairman; W. E. Chastain, engineer of physical research, Bureau of Research and Planning, Illinois Division of Highways, secretary.

Also: J. D. Lindsay, engineer of materials, and Carl M. Wahl, district engineer, Illinois Division of Highways; C. C. Wiley, professor of highway engineering, University of Illinois; Donald B. Walker, superintendent of highways for Warren County; William S. Pollard, Jr., assistant professor of civil engineering, University of Illinois; Fred Kellam, Chicago, engineer of bridges for the U. S. Bureau of Public Roads; F. L. Anthony, representing the Springfield office of the U. S. Bureau of Public Roads; Duncan M. Campbell, Chicago, chief engineer of Cook County's department of highways; Virgil E. Gunlock, Chicago, commissioner of Chicago's department of subways and superhighways; and John T. Kearns, city engineer of Champaign.

Coal industry and RR.'s study fly ash and cinders

A research and development project aimed at reducing air pollution from fly ash and cinders emitted by steam locomotives is making important progress. It is jointly sponsored by the railroads serving Allegheny County, Pa., and the bituminous coal industry through its research agency, Bituminous Coal Research, Inc.

The project was started in 1949 to develop methods by which railroads could comply more effectively with a new county smoke ordinance. The objective was research on the design, construction, and testing of a cinder and fly ash collection and disposal system suitable for conventional steam locomotives, which would reduce stack emission of solids 75 per cent by weight.

Performance tests with conventional collection and reinjection methods reduced the stack emission about 50 percent by burning on the grate part of the carbon in the coarse reinjected cinders. Since this percentage reduction did not meet the objective of the research, it has been necessary to explore all possible methods through which a further reduction in stack emission could be made.

Equipment will be experimented with to determine whether the remaining cinders can be reduced to a size which will permit the carbon content to be burned within the space limitations of the locomotive firebox.

At present the system being investigated is: (1) Cinders are collected and classified in the collector, (2) coarse cinders are returned to the locomotive firebox and burned on the grate; and (3) the remaining cinders are pulverized and returned to the firebox for burning in suspension.

It is anticipated that fuel savings resulting from the installation would soon pay for the added equipment. When laboratory studies show a satisfactory approach to this problem, full scale equipment will be constructed and tested at the Pennsylvania Railroad's test plant at Altoona, Pa.

More scholarship aid to be given at Carnegie

Carnegie Institute of Technology has received a $300,000 grant from the A. W. Mellon Educational and Charitable Trust to establish permanent scholarships that may not demand topnotch school marks.

The grant is in the form of an endowment, income from which will be used to help about 35 deserving students each year. Established in 1938, the scholarships were maintained until now by yearly grants from the Mellon Trust.

Carnegie President J. C. Warner says, "Besides being substantial financial support for Carnegie, this fund is a permanent investment in the future of the school and in the lives of worthy, self-reliant young men and women who want to study at Carnegie but, through no fault of

their own, lack sufficient funds."

He explained that, unlike most awards, the Mellon Scholarships may not require a superior scholastic record. "If the applicant has shown a desire to help himself through part-time jobs or constructive extra-curricular activity preventing him from being outstanding in his academic work, then scholastic requirements may be relaxed somewhat."

The scholarships will be administered by Carnegie's Committee on Financial Aid for Students. In awarding Mellon aid to students, Dr. Warner pointed out, "We would be especially interested in applicants whose need is the result of a misfortune, such as the death or disability of a father, but we would not be much interested in need resulting from improvidence or lack of planning."

Since 1938, nearly 450 Carnegie students have received tuition help as a result of A. W. Mellon grants. These grants since 1942 have amounted to $10,000 yearly.

(Continued on page 60)

WOOD DIAPHRAGMS—Research at the Oregon Forest Products Laboratory on diagonally sheathed wood diaphragms was summarized by George H. Atherton, engineer for the laboratory, in a paper presented before the recent convention of the Structural Engineers Association of California held in Yosemite National Park.

COLUMN RESEARCH—Prof. Bruce G. Johnson, professor of structural engineering, University of Michigan, reports on progress in column research as carried on by the Column Research Council of the Engineering Foundation at the recent Structural Engineers Association of California convention held in Yosemite National Park.

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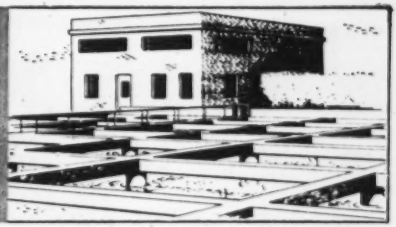

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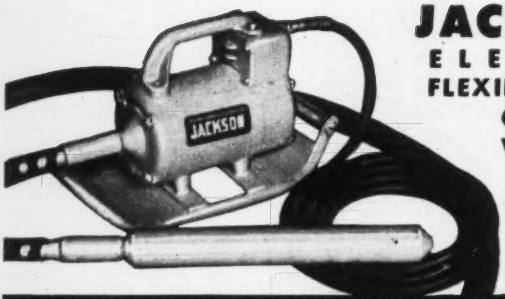

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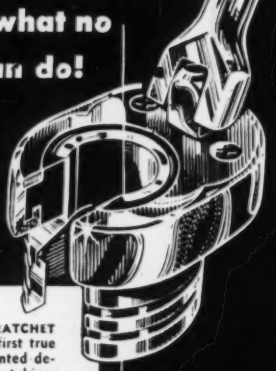

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Education, Research . . .

(*Continued from page 59*)

• **Housing at Illinois and RPI**—Approval of long-term, low-interest rate loans for construction of housing needed because of defense activities at two technological institutes has been announced by Administrator Raymond M. Foley of the Housing and Home Finance Agency. A loan of $1,045,000 to the Illinois Institute of Technology, at Chicago, is to cover construction of an apartment building to house 96 faculty members and graduate students with their families. The institute is conducting a large research program for the federal government and has expanded its ROTC enrollment. Rensselaer Polytechnic Institute at Troy, N. Y., will receive $2,880,000 to be used in the construction of four dormitory units to house 620 students, and for dining facilities. Rensselaer has expanded Army, Navy and Air ROTC units with more than 1,200 students and holds a number of defense contracts. Construction will start with approval of architects' plans now on the drawing boards.

• **Sewage and water treatment**—At the recent annual sewage and industrial water treatment school at Chapel Hill, N. C., instructors in addition to members of the faculty of the department of sanitary engineering at the University of North Carolina, were George Diehlman of the National Lead Co.; Harry Faber of the Chlorine Institute; C. E. Keefer of Baltimore, Md.; Maurice LeBosquet, of the United States Public Health Service, Cincinnati, Ohio; W. A. Moggio, of the National Council for Stream Improvement; H. F. McCullough of the General Electric Co.; Joseph McCarthy of the Lawrence Experiment Station; Harry Schlenz of the Pacific Flush Tank Co.; and H. J. Spaeder of the Door Co.

• **Israeli technology**—At the Hebrew Institute of Technology, Haifa, the faculty is being largely increased and applications for faculty places are being sought by President Rav-Aloof Y. Dori and Prof. S. Goldstein. New associate professors and other staff for the three divisions of the Faculty of Civil Engineering – Buildings and Structures, Public Works, Hydraulic Engineering–as well as a professor or associate professor of architecture or town planning will train the specialists needed by Israel to help alleviate its acute housing and planning problems, in addition to carrying out important research work in those fields.

MEETINGS

N.E. sewage group hears of wool waste research

New England's wool processing industry is testing a process change that would reduce substantially an important cause of water pollution in the area.

The New England Sewage Works Association, meeting at Providence, R. I., learned this from Harold H. Webber, executive director of the Lowell, Mass., Textile Institute, who told of industry backing for pilot plant experiments his school has been conducting.

Present-day wool washing processes pour great volumes of soapy waste mixtures into New England streams daily. The new process being tried cleans wool with alcohol to such wastes—and benefit the manufacturers as well by lowering costs.

The process promises to reduce fiber breakage and permit substantial recovery of natural waxes, said Mr. Webber. Also it permits continuous re-use of the organic solvents and leaves only a dry residue. A federal grant to the school and the woolen industry is financing the experiments.

E. Sherman Chase of Boston was elected president for the coming year, Eugene L. Bond of Greenfield, Mass., and Charles G. Hammann of Providence, vice-presidents; Walter E. Merrill of Boston, secretary-treasurer; Walter C. Anderson of Cranston, R. I., Walter M. Kunsch of Waterbury, Conn., and George C. Bogren of Boston, directors; and Stephen M. Hurley of Providence, assistant secretary.

Truck group urges multi-billion road work

American Trucking Associations, Inc., urged a multibillion dollar highway rehabilitation program at its annual convention in Chicago. Directors adopted two resolutions promising all-out support of efforts to bring deficient roads to their highest efficiency. One resolution endorsed "Project: Adequate Roads," sponsored by the National Highway Users Conference, Washington, and directed that the ATA executive committee and staff cooperate with the conference in promoting the program.

"Project: Adequate Roads," started only in a few states, will soon be announced on a nationwide scale, according to an ATA spokesman. It involves a study of all major highways against a "sufficiency rating" yardstick, which consists of construction requirements, expectancy of the roads, and safety.

In another resolution directors recommended that Congress and appropriate federal agencies be promptly urged to reconsider the pressing need for highway rehabilitation, with a view to granting the states whatever aid is necessary in the way of finances and steel and other material.

It was emphasized that the expansion of the highway system has not maintained pace with the growth in traffic volume.

E. J. Thomas, president of the Goodyear Tire & Rubber Co., told the convention that prospects in 1960 are for 3,000,000 more trucks, 13,000,000 more automobiles and 800,000 more farm tractors, raising the country's vehicle total close to 69,000,000.

Walter F. Mullady, president of Decatur Cartage Co., Chicago, was elected president. Other officers: Walter F. Carey, Detroit, first vice-president; Fred B. Hufnagel Jr., Philadelphia, reelected second-vice-president; C. J. Williams, Milwaukee, third vice-president; John Ruan, Des Moines, fourth vice-president; George V. Eastes, Seattle, reelected treasurer, and Chester G. Moore, Chicago, reelected secretary.

A. D. Peckham of Bakersfield, Calif., succeeds Walter B. Mellett president of the California State Builders Exchange. Other new officers are Donald B. Kirby, first vice-president, Irving Butcher, second vice-president, Harry Chernus, third vice-president, William G. Wright, secretary, and Joseph C. Burr, treasurer.

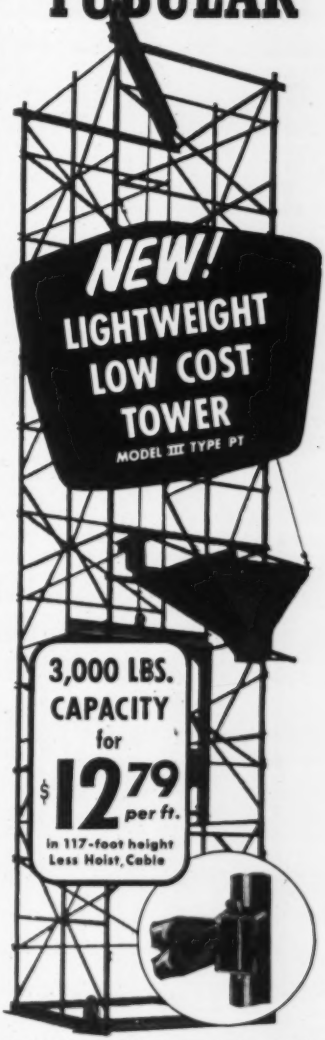
John H. Myers, 82, retired division engineer of the N. Y. City Board of Transportation, addressed the Society of Municipal Engineers of the City of New York on Oct. 24. He discussed the more interesting subway construction projects which were under his supervision, and also told of his personal activities as an engineer in retirement.

C. P. Ballenger, Jr., of Greenville, S. C., has been elected president of the Carolinas branch of the Associated General Contractors of America. Other officers: M. R. Cowper of Kinston, vice-president; Roy L. Goode of Charlotte, treasurer; and Robert Pattern of Charlotte, managing director. Hal S. Crain of Durham, retiring president, was named director.

Is the steel you need loafing on your scrap pile?

(Continued on page 62)

AMERICAN TUBULAR



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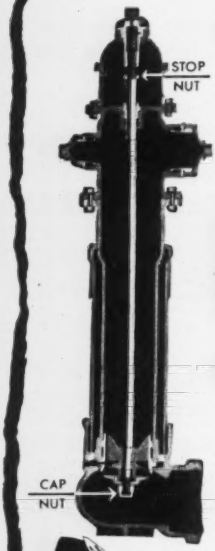

The heavy-duty bronze stop nut stops the downward travel of the operating stem, preventing the fully thread-protecting cap nut on the lower end from touching the bottom of the elbow. Thus the stem of the Mathews Modernized Hydrant cannot be bent in operation, even when excessive pressure is applied.

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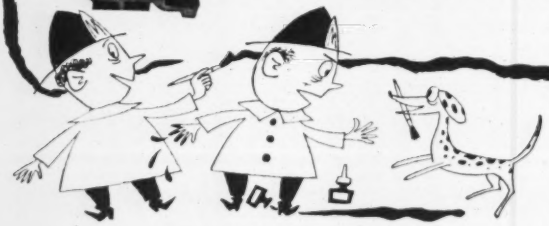

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The North Carolina League of Municipalities has adopted a resolution hitting at the state administration for alleged lack of cooperation with local government units and demanding that the State Highway Commission change its policy of refusing to perform local street work inside towns under the Powell Act. That act gives cities and towns a portion of the state gasoline tax receipts for use on streets which are not parts of the highway system, and requires that the highway commission take over the full job of constructing and maintaining streets which are parts of the highway system. It also provides that the commission and municipalities may enter into contracts to have the commission do the work on nonhighway streets, using the funds set aside under the act. The commission, however, claims that it does not have the men and equipment to handle this in addition to regular highway needs and the work under the $200,000,000 rural road bond construction program. Governor W. Kerr Scott said the commission is busy with the secondary roads program.

CALENDAR

American Concrete Pipe Association, short course school, Edgewater Beach Hotel, Chicago, Nov. 26-28.

Conference on Atomic Installation in Buildings, Building Research Advisory Board, (Laboratory design for handling radioactive materials) National Academy of Science auditorium, Washington, D. C. Nov. 27-28.

Southeastern Association of State Highway Officials, Francis Marion Hotel, Charleston, S. C., Dec. 5-7.

Southeastern Association of State Highway Officials, annual meeting, Charleston, S. C., Dec. 6-7.

Bituminous Concrete Producers Association, annual convention. The Roosevelt Hotel, New York City, Dec. 6.

Kansas Contractors Association, annual meeting, Hotel President, Kansas City, Mo., Jan. 10-11.

N. Y. Section, American Water Works Association, winter luncheon meeting, Hotel Park Sheraton, N. Y. City, Jan. 15.

Highway Research Board, annual meeting, National Academy of Science Bldg., Washington, D. C., Jan. 15-18.

Canadian Construction Association, annual meeting, Royal York Hotel, Toronto, Ont., Jan. 20-23.

National Association of Home Builders, annual convention and exposition, Conrad Hilton and Congress Hotel, Chicago, Jan. 20-24.

American Road Builders Association, Golden Anniversary, Rice Hotel, Houston, Tex., Jan. 21-24.

Wisconsin Highway Commissioners and Highway Committee Members Association, winter conference, Schroeder Hotel, Milwaukee, Jan. 22-24.

OBITUARY

Samuel P Coffin, 68, chief engineer since 1948 of the Massachusetts Department of Public Utilities, died at Quincy, Mass., Nov. 4. He was a civil engineer on the Boston & Maine Railroad for 20 years prior to joining the Bay State commission in 1931.

Benjamin Franklin, 90, a civil engineer, died Oct. 30 at Philadelphia. He was the senior partner of Franklin and Lindsey. He was a graduate of the University of Pennsylvania.

O. Frank Goetz, 59, former Tennessee State Highway Department construction engineer, died in Nashville Oct. 30. He was a graduate of the University of Tennessee school of engineering and took post-graduate work in engineering at Columbia. Mr. Goetz retired last July after 32 years service. He did special work for the department before his appointment as resident engineer on surveys and construction in 1918, and held that position until 1925 when he was appointed office engineer for the headquarters office. In 1929 he became assistant highway engineer in charge of traffic and affiliated activities, and was appointed chief engineer of the department in 1933, serving until 1938.

L. Dudley Coles, 62, former chief engineer of Newark, N. J., died Nov. 2. After graduation from the University of Pennsylvania as a civil engineer he was assistant engineer of Camden County, N. J., from 1912 to 1915. From the latter date until 1917 he was bridge inspector and surveyor for the N. J. highway department, supervising the construction of bridges and the mapping of state highways. He served with distinction in World War I. After further service with the New Jersey highways, he became office engineer in Newark's department of public affairs, and on Feb. 1, 1944 he was made chief engineer of the city's department of public works.

George E. Larsen, 65, a retired civil engineer, died at Omaha, Neb., Oct. 29. The last project he worked on was Davis Dam at Kingman, Ariz.

James A Rowat, 70, for five years city engineer of Estherville, Iowa, died Oct. 28.

William T. Morrissey, 54, chairman of the Metropolitan District Commission, Boston, Mass., died in Cohasset, Mass., Nov. 6. He studied engineering at Franklin Union, Boston, entering the city's employ as a rodman in 1915. After serving the U. S. Navy in World War I he joined the public works department of Boston, later becoming its chief engineer and then commissioner. n 1945 he was made chairman of the MDC.

Andrew Jensen, 78, retired contractor and pioneer in the field of reinforced concrete, cement waterproofing, and power equipment applications in construction, died at Framingham, Mass., on Nov. 5. He was long active in bridge, building and dam construction.

Ray Page Higbee, 71, retired chief elevator engineer for government buildings, died Nov. 2 in Washington, D. C. A graduate of Bloomington College in Indiana and Columbia University, Mr. Higbee worked for the government as an elevator engineer for 15 years before retiring a year ago. He patented several improvements in elevators.

Ralph Henry Chilton, 61, civil engineer, who was a patent attorney with General Motors for 30 years and a former employee of the U. S. Patent Office in Washington, D. C., died Nov. 1 in Dayton, Ohio. Mr. Chilton got his engineering degree from Virginia Polytechnic Institute.

James Warren Kramer, 65, a retired civil engineer, died Nov. 3 in Washington, D. C. He helped on the construction of the Supreme Court Building, and the Louisiana State Capitol at Baton Rouge, La. He served in World War I and after that worked for a number of architects and construction companies in Washington, D. C.

Rodman M. Brown, 77, retired chief engineer of the city building department of Omaha, Neb., died Oct. 30. With the exception of the period between 1919 and 1933, when he was Omaha manager for the George W. Stiles Construction Co. of Chicago, he had worked for the city from 1912 to his retirement almost two years ago. He was chief of the building department's engineering division for 18 years.

Hal Kernachan, district engineer for the Alabama State Highway Department for the last 25 years, died in Scottsboro, Ala., Oct. 24.

Joseph H. Rice, 78, retired, for several years a civil engineer for the Lake Shore and Michigan Southern Railroad, died Oct. 21 in Ashtabula, Ohio. He was a graduate of Case School of Applied Science in Cleveland.

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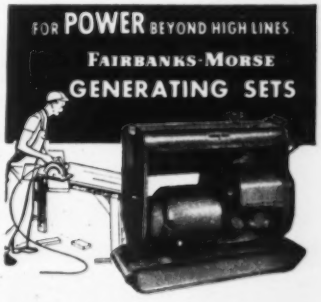

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LABOR

Area pay rates set for building trades

Busily at work determining "area wage rates" for the 19 building trades crafts in as many cities as possible, the Construction Industry Stabilization Commission is taking account of the fact that premium pay practices aimed at getting and holding workers are common in construction as well as in all other industry.

CISC—a tripartite agency under the Wage Stabilization Board (ENR June 7, p. 24)—is setting rates that contractors may pay to on-site construction mechanics and laborers without the need of coming to CISC for approval.

• **Rates vary**—Evidence of CISC's consideration of local conditions is that while it stabilizes wage and fringe benefits in an area, the rates vary from area to area.

For example, carpenter rates have been set at $2.69 an hour in Milwaukee, but only $2 an hour in Concord, N. H. Bricklayer rates are set at $3.30 in Seattle and at $2.50 in Charlotte, N. C. Ironworkers get $3.25 in Trenton, $2.35 in Denver. (Several hundred such rates have already been determined, varying generally between these figures.)

CISC does not use the automatic cost-of-living formula that WSB allows for factory and other wage earners, but it will approve area rates up to 10% above Korea levels. (It disapproved a cost-of-living escalator in a carpenter contract at Rockford, Ill., and wouldn't sanction an incentive bonus—above the established union scale—for workers of a midwest construction firm).

Within the 10%, CISC is approving—when requested—higher rates for individual contractors, in advance of an "area rate" determination.

• **Premium pay**—But controlling hourly wage rates is only part of CISC's business: It is also concerned with premium pay practices (fringe benefits) like travel pay, subsistence, isolation pay, overtime, pensions, health insurance. These of course are part of wage costs, and have become more common in construction in recent years.

You can get an idea of what some of these practices are—and where—from recent rulings. What new benefits CISC will permit remains to be seen. A test is before WSB over "isolation pay" at the Hanford Atomic energy project at Richland, Wash. (ENR Nov. 1, p. 86).

But here are some of the premiums CISC has already approved:

• **Isolation or subsistence**—Greensboro, N. C., $3 a day for out of town work for plumbers; Paducah, Ky., $2.20 a day in lieu of subsistence and travel for sheet metal workers; Oakland, Calif., $3.25 a day for iron workers; Las Vegas, Nev., $3.50 a day for carpenters, laborers, operating engineers, teamsters, etc. at AEC project who do not live at campsite; Arco, Idaho, $3 a day in lieu of travel time, for electrical workers.

• **Travel pay**—Dana, Ind., 5 cents a mile from Terra Haute (28 mi) for plumbers; Fredericksburgh, Va., $2 a day for operating engineers; Syracuse, N. Y., travel expenses for asbestos workers of $21 a week (up to 30 mi), $28 (over 30 mi) and $31.50 (over 50 mi); Mobile, Ala., travel allowances for all crafts from $1 to $3 a day depending on distance; Greenville, S. C., 5 cents a mile for plumbers outside city limits; Cincinnati, 40 cents a day for plumbers for every three miles beyond eight miles from center of city.

• **Shift and overtime**—Denver, 25 cent hourly premium on swing shift, 40 cents on graveyard shift for electricians; Parkersburg, Va., double time for overtime for bricklayers.

• **Holiday pay**—Washington, D. C., for laborers, double time on inaugural day, as is paid on other holidays.

• **Welfare payments**—Hartford, Conn., 10 cents an hour contribution for welfare fund for operating engineers; Detroit, contributions to welfare funds for electricians, 5 cents for each straight-time hour, 10 cents for each overtime hour; Elizabeth, N. J., 10 cents an hour to welfare fund for bricklayers; Boston, 10 cents an hour for welfare fund for plumbers; San Francisco, 2% contribution to trust fund for group insurance for hod carriers and laborers; Baltimore, 3% contribution to welfare fund for sheet metal workers.

Labor briefs . . .

• **Quit loafing**—Chicago newspapers made considerable point out of the statement of Michael J. Boyle, business manager of an electrical workers local, who called on his electricians to "quit loafing" on the job. He was careful also to lay part of the blame on contractors for lax supervision, but warned workers that "loafing works against our own interest."

• **Buffalo carpenters raised**—Union carpenters on home construction in the Buffalo area will receive total increases of 20 cents an hour under a new agreement approved by WSB. Fifteen cents of the raise is effective Nov. 1, the remainder in May.

• **Resume Wilmington work**—A union organizing attempt at Wilmington's $20 million Merchandise Mart (ENR Nov. 15, p. 54) has been settled under an agreement between the Building and Construction Trades Council of Delaware and Petrillo Bros. Corp., ready-mix concrete suppliers. A picket line will be maintained—but only to try to organize non-union workers, not bar union men from the job. Recent organizing attempts had led to filing of charges of unfair labor practices before NLRB.

• **Richland carpenters back**—Pending mediation, 850 carpenters at the AEC's Richland, Wash., plant returned to work. They had objected to employment of a supervisor they didn't like, stayed out a full week in protest, pending new negotiations.

• **Canton roofers up**—AFL roofers in ten Ohio counties around Canton got a 13-cent an hour wage boost, to bring their rates to $2.25 an hour, with approval of WSB.

• **End jobless benefits for strikers?**—The Arizona Building Contractors association, at its fourth annual convention at Phoenix, urged amendment of the state employment security laws to ban strikers from benefits.

• **Union vs union**—Wincel Harmon, a leader of United Furniture Workers, CIO, last week (with his union) filed an injunction suit against the United Brotherhood of Carpenters and Joiners at Falls City, Ind., and Gunnison Homes Inc., New Albany, Ind., to restrain the AFL union and the employer from discouraging Gunnison workers from supporting CIO. An NLRB bargaining election is pending.

• **More pay for supervisors**—The SSB has ruled that employers may give foremen and other supervisors extra pay for hours "exceeding their normal work week." SSB said employers may continue to pay straight time or time and a half for such employes for overtime work in cases where that was the practice prior to Jan. 25, 1951. Where no such practice was established, employes may compensate supervisors at straight time only.

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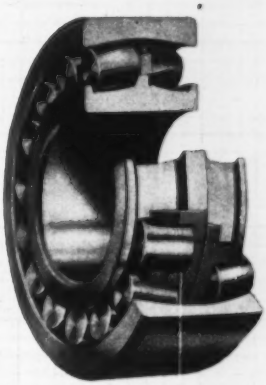

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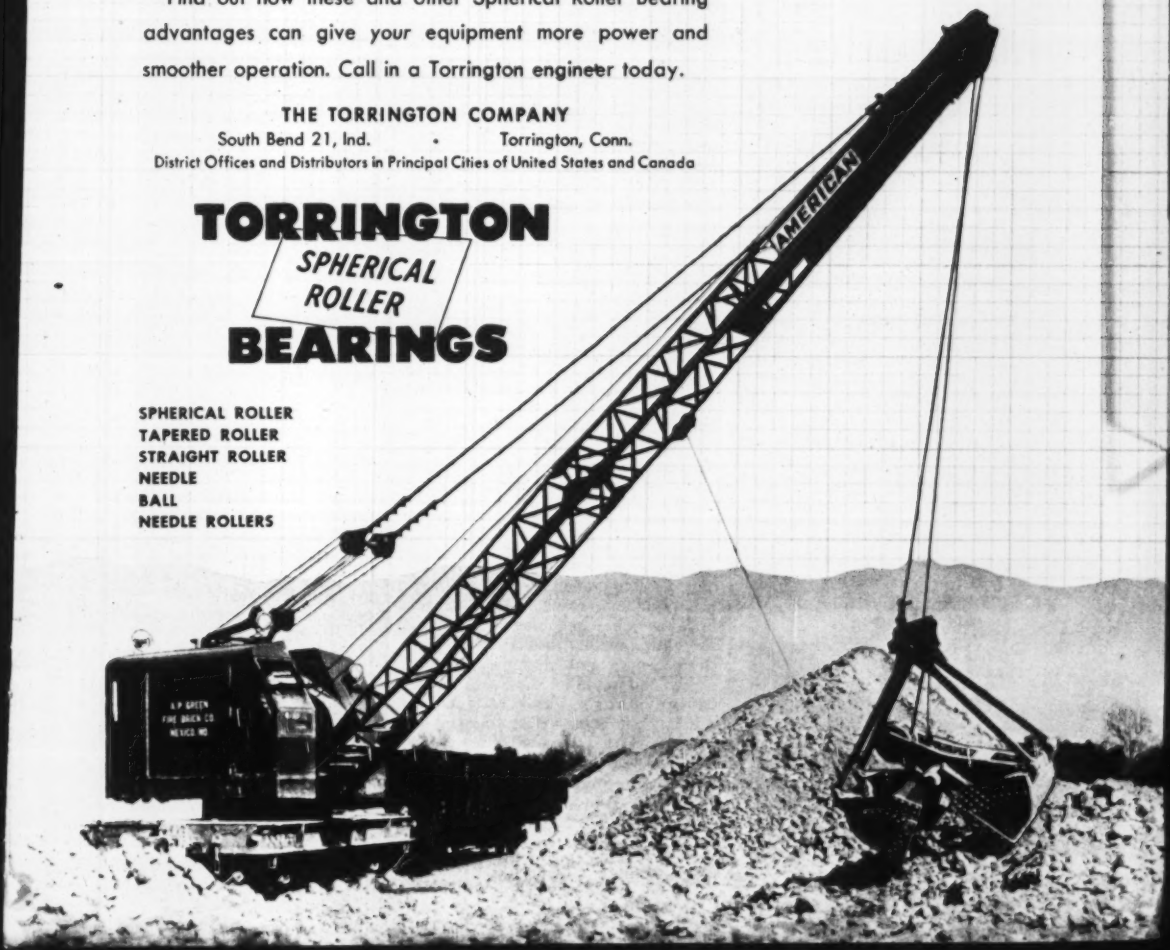

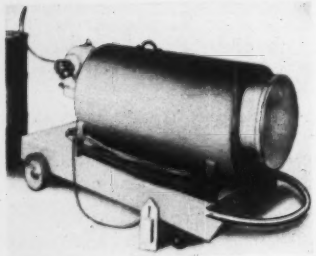

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CONSTRUCTION BUSINESS

Commercial curbs working as planned

Government curbs on commercial construction—aimed at a sharp reduction in this type of building to save critical materials for defense construction—are apparently having the desired effect, according to a report by the National Production Authority on fourth quarter applications.

Of commercial jobs, valued at $650 million, that applied to NPA for clearance, the agency gave the green light to jobs having a total estimated cost—for completion—of $290 million.

That means that nearly 45% of the dollar volume of commercial building projects that made application can go ahead today—but those jobs don't represent new starts in this quarter.

• **Most had started**—Probably 90% of all applications that the NPA Construction Controls Division approved or denied this quarter were for going projects—jobs that were already under construction before October 1.

The number of projects denied—principally new starts—far exceeded the number of projects approved.

NPA admits that the results for the next quarter won't be any better—and they may be worse. The agency is now processing applications for the first quarter of 1952.

NPA's Construction Controls Division handles all commercial building applications and, all applications for religious, institutional, recreational, and miscellaneous construction.

Included in the list are public works of certain types: Administrative buildings, post offices, armories, jails, police and fire stations, wharves, sea walls, subways, and other municipal facilities.

• **Value reaches $1 billion**—For all categories of construction on its list, the division received nearly 3,900 separate project applications involving a cost in access of $1 billion dollars.

The agency approved more than 1,400 that add up to a gross value of nearly $425 million.

Not all of the cleared projects required allotments of controlled materials. But the bulk of the commercial building jobs, including warehouses and office buildings, did ask for needed steel, copper and aluminum. There was no aluminum for these jobs in the current quarter.

• **Keep 'em going**—With meager allowances of less than 40,000 tons of steel and less than 260,000 pounds of copper, the Construction Controls Division tried to allot enough of these materials to 188 commercial projects to keep the jobs going during the fourth quarter.

These commercial jobs have a total value of $243 million. Another 122 smaller commercial projects, with a gross valuation of about $20 million required no steel or copper allotments.

For its full list of applicants, the Construction Controls Division was able to allot small amounts of steel and copper to 298 jobs with a total value of more than $350 million.

No allotments were needed for 210 projects that have a gross value of about $30 million.

Besides these projects, the division ruled 907 jobs exempt. These jobs, valued at about $40 million, require no NPA approval.

(Continued on page 67)

How to live with CMP

Harvey Howe, assistant vice-president of Lock Joint Pipe Co. and the man who set up NPA's Water Resources Division (separate claimant agency for water and waste works constructors) offers this advice on materials procurement—applicable to all who must work with the Controlled Materials Plan:

1. Establish the need for your project. Submit yith your CMP-4C documented evidence that the job is vital: to public health, atomic energy development, defense agencies or whatever.

2. List all B products to go into the work. Don't request controlled materials for them, but list them, separately, as a guide to the claimant agency in allocating controlled materials to their producers. (Right now B product manufacturers are getting insufficient metals because a guide to their exact need is lacking.)

3. In all correspondence with Washington concerning an application already submitted, use the J-number assigned for quick and easy reference to it by your claimant agency.

4. Tell the claimant agency when your budget set-up requires that bids be taken on the project for which you seek materials. Your schedule will influence materials allotment scheduling.

5. If your application is for controlled materials to complete a portion of a total program, let it be known just how far the program as a whole has advanced toward completion. Your chances of getting materials for a million dollar contract will be enhanced if the claimant agency knows this contract will complete a vital $10 million project, for example.

• **Who was stopped?**—Jobs that were ready to get started in this quarter were the ones that suffered denials. But a denial now isn't a permanent "No". Applicants are urged to submit requests again for succeeding quarters until materials can be alloted to let them begin construction.

Denials for the current quarter totaled more than 2,400 cases, valued at nearly $580 million. These jobs go into the backlog of deferred construction that must wait for a later start.

Two objectives determined the decisions on project applications. First, the NPA division wanted work to continue on projects that were already underway. And it wanted to get these projects completed as fast as possible. So top priority went to jobs that were started.

• **Failed the test**—Second, the agency had no controlled materials to spare for any new project that could not prove a direct or indirect connection with the defense program. Only a few projects in the categories tied into commercial construction could meet the test. Most failed.

Allotments to projects had to come out of scanty supplies. Applicants requested nearly 265,000 tons of steel, more than 7 million lb. of copper and almost 1.8 million lb. of aluminum.

The Construction Controls Division had available for allotment only 15% of the steel requested, less than 4% of the copper and none of the aluminum. Structural shapes were a tight steel item—only 11% of the requirements could be met.

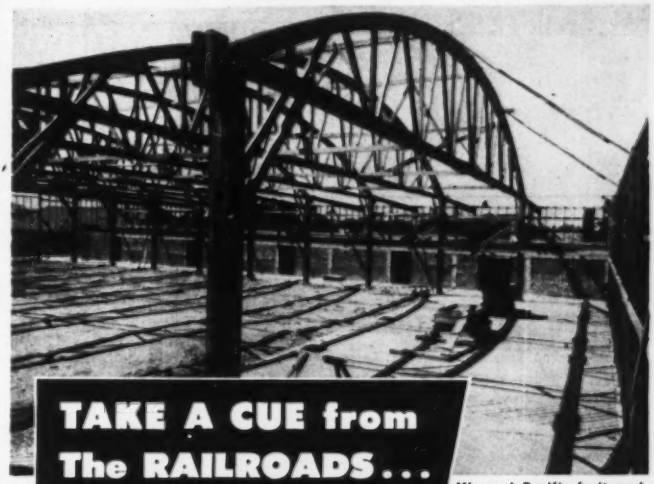
Looking ahead, copper and structural steel will continue to hamstring commercial building in the next two quarters. Aluminum production will increase during the year, and commercial construction will begin to get some in the second half.

Structural steel should be in better balance before the year end—but copper will remain tight for a long time into the future—and will be a long range deterrent.

Business briefs . . .

• **Aluminum output**—Despite a 6% drop in U. S. primary aluminum production in September, due to power shortages in the Northwest, third quarter output topped the second quarter by more than 6%. Third quarter shipments of aluminum sheet and plate totaled 263.3 million pounds.

• **Cement shipments**—Finished cement shipments in September were 2% greater than those reported in September, 1950, according to the Bureau of Mines. September shipments were in excess of 23 million barrels.



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Missouri Pacific fruit and vegetable warehouse, Alamo, Texas, has 88' clear span bowstring trusses using Teco connectors and designed, fabricated and erected by Connector Truss Co., Houston, Texas.

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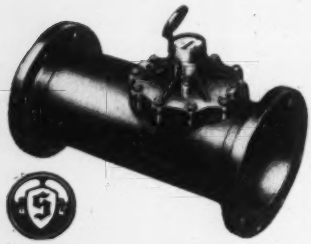

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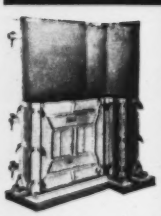

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UNIT PRICES BID BY CONTRACTORS

Road paving and grade separation, N Y

Construction of 6.77 miles of asphaltic concrete pavement and a 163-ft grade separation in Jefferson County, 5 miles north of Watertown, N Y drew only 1 bidder Aug. 29, 1951 when New York State Department of Public Works opened bids. Bertram D. Tallamy is State Superintendent of Public Works and Roy F. Hall is district engineer, Watertown.

Highway traffic must be maintained over the existing highway with much of its present alignment used in this improvement. Work includes construction of a 163-ft, three span, I-Beam railroad grade separation structure at the intersection of the new road with the New York Central tracks, asphaltic concrete pavement, 20 ft wide, and 0.17 mile of gravel access roads. Hard driving, to a proper bearing, of steel H piles for the bridge is anticipated due to a varying mixture of sand, silt and clay. Work should be completed by Nov. 1, 1952.

The only bidder, Law Bros. Company of Herkimer, New York, was awarded the contract on a bid 3% below the engineer's estimate.

The contractor must furnish one building to be used as field laboratories for soil compaction control, suitable lighting and fuel for oil heating equipment. Payment for the building or its maintenance must be included in the prices bid for other contract items. The Department of Public Works will pay for all changes in telegraph, telephone and signal lines made necessary by relocation or removal of poles in order to clear the site for bridge approaches and structure; any like changes made for the convenience of the contractor will be paid for by the contractor. All work affecting The New York Central Railroad Co.'s property will be carried out under the joint supervision of the Department of Public Works and The NYCRR. Contractor must not foul an operated track without written permission of the NYCR nor interfere with train schedules, nor endanger the public. If any railroad employees are loaned to the contractor, he is liable and must carry compensation insurance; public liability insurance and public property damage insurance, at his own expense. Should conductors and brakemen be lent to the contractor as flagmen, contractor will pay conductors $12.06 per day and $2.2625 per hour for overtime, brakemen $10.64 per day and $1,995 per hour.

Reflecting construction signs, 6 x 8, must be placed at the beginning and end of the contract and at designated intersections. If at any time the engineer finds dust to be offensive to the public or nearby property owners he will direct the contractor to sprinkle the cut or fill responsible for the dust condition.

The labor shortage in this area necessitates granting of a dispensation under Chapter 581 by the State Department of Labor. For all work in excess of 8 hrs per day and in excess of 5 days per week, the overtime rate shall apply and comply with premium wages prevailing in the area in which the work is performed.

Minimum wage rates in the area are $1.55 for laborers; $1.55 for concrete and cement workers; $1.65 for asphalt tampers and smoothers; $2.37 for pile drivers and $2.60 for pile driver operators; $2.65 for structural steel workers.

The only bid was:

1C Law Bros. Company, Herkimer, New York . . $888,747
Department's Estimate 689,000

Bids: 8-29-51 Items	Unit	Quantity	Unit prices 1 C
Clearing & grubbing	ls		$5,800 00
Furn water equipment	ls		800 00
Applying water	M gal	1,000	1 00
Uncl excavation	cy	228,000	0 54
Trench, culv, bridge exc	cy	4,530	2 00
Overhaul	cy	10,000	0 005
Trimming road section	lf	36,950	0 30
Preparing fine grade	sy	81,700	0 15
Pipe underdrn, conc or VC, 8" dia	lf	1,400	1 25
RC culv pipe, 12" dia	lf	610	3 75
18" dia	lf	76	5 50
24" dia	lf	1,836	7 00
30" dia	lf	320	11 00
RC cattle pass	lf	92	42 00
Portland cmt, type 2	bbl	2,250	4 50
Natural cmt, type N	bbl	360	4 50
Cl 1A conc for structs	cy	945	45 00
Cl 1 conc	cy	456	45 00
Steel fabric reinf	sy	750	0 70
Bar reinf for structs	lb	141,000	0 12
Spiral bar reinf	lb	1,220	1 70
Str stl	lb	132,000	0 16
Opt. guide railng	lf	18,100	2 20
Opt guide posts	ea	98	8 00
Metal railing	lf	350	17 00
Fundn crse ROB grav	cy	23,800	1 25
Bot crse bit mac pen meth, asph	ton	15,000	3 25
Cmt conc pavement	cy	60	32 00
Bit material dampproofing	gal	470	1 00
Bit material "A" paving	gal	104,000	0 17
Maint & prot of traffic	ls		2,500 00
Dry riprap	cy	890	10 00
Remov exist superstructs	ls		1,200 00
Cofferdams	ls		4,000 00
Untr timber piles	lf	4,300	2 00
Untr timber test piles	lf	230	4 00
Steel bearing piles	lf	1,600	6 00
Cast in pl conc piles	lf	330	40 00
Furn equip for driv piles	ls		600 00
Screened grav, LM	cy	30	5 00
Broken stone, LM	ton	300	3 00
Conc gutters	sy	530	4 00
Catch basins, MH & drop inlets	ea	25	100 00
ROW markers, optional	ea	360	7 00
Timber & lumber	Mfbm	6	250 00
Relaying old pipe	lf	280	1 50
Pneum projected conc	sf	3,000	1 65
ROB gravel fill	cy	11,000	1 50
Refl highway-RR cross signs	ea	2	200 00
Reloc RR approach warn signs, refl type	ea	2	50 00
Topsoil pl from stock piles	cy	3,800	1 50
Topsoil f & pl	cy	200	2 00
Ground prep w soil amend, fert, furn seed & seeding & mulching	ac	35	3 50
Furn seed & seeding	ac	0 3	300 00
Furn sod & sodding	sy	2,250	1 25
Furn sod & sodding	sy	480	1 25
Furn mulch & mulching	ac	10	80 00
RR protection	ls		4,000.00

LM loose measure

NEW LINCOLN PLANT CREATED BY INCENTIVE-INSPIRED CO-ACTION IN DEVELOPING POSSIBILITIES IN PRODUCT

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WELDED DESIGN SAVES 48 TONS OF STEEL

...cuts erection time and cost

By **EMERSON C. SCHOLER**
Scholer, Sakellar and Fuller, Architects
Tucson, Arizona

WE ESTIMATE the use of welded design has made it possible to cut our steel requirements by 15% on the new Y. M. C. A. building in Tucson, Arizona. Several weeks saved in the fabrication and erection of the 325-ton steel framework have, in addition, netted substantial reductions in costs.

The rigid bent construction used on this project provides a 77 foot clear span for the gymnasium and a 62 foot span for the swimming pool. The overhead clearance, achieved with welded design, provides a clear, unobstructed view from all parts of the enclosure. Simple in design, the beams and columns are easily fabricated in any steel shop and can be erected with a construction crew of 6 men.

Fig. 3. Section of Framework *over swimming pool. Shows clean, simple design. Fabricators and Erectors: Chapman Dyer Steel Manufacturing Company. General Contractor: H.L. McCoy Construction Co.*

Fig. 4. Lowering Rigid Beam *into place. Beam is 24" WF 76# I section tapered, with radius of 7' 6" at haunches. Beam rests on seat clips for field welding to column.*

WELDED STEEL DESIGNS ALWAYS SAVE STEEL AND LOWER COSTS

Fig. 1. Simple Beam-to-Column Connection *for 325 ton rigid framework, new Y.M.C.A. building, Tucson, Arizona.*

Fig. 2. Typical, Low-Cost Detail *for cross bracing. Permits fast, simple field welding. Sketches show elements of construction without welds.*

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THE LINCOLN ELECTRIC COMPANY
CLEVELAND 17, OHIO

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager — **J. A. MAHONEY, Reports** — **M. R. ROESSLER, Statistics**

NEW ENGLAND

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Westcott Constr. Co., 52 N. Washington St. North Attleboro, Mass.; LB, **$937,900**, Contr. 1, town sewage treatment plant and east Broadway Sewage Pumping Station and sewer service, Broadway, MILFORD, CONN. Town, Town Hall, Milford, Conn. Bids Nov. 5. CD 10/3.

MIDDLE ATLANTIC

BIDS ASKED—BUILDINGS

▲ **N. J., Dover**—HOSPITAL—B.A. 11/29—Dover General Hospital, Jardine St., hospital addn. $1,046,667. Henry W. Vreeland, 4 Court St., Morriston, Zone 2, archt. CD 7/18.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

NEW YORK—Bureau Contracts Accounts, The Governor Alfred E. Smith State Office Bldg., Albany.

John C. Peterson Constr. Corp., 958 Church St., Baldwin, N. Y. CA: **$818,362**, 2.06 mi. Wantagh-Central Park Hy., Nassau Co. Bids Oct. 24. CD 10/29, under LB.

▲ **T & T Contr. Co.**, 4814 Glenwood Rd., Brooklyn 3, N. Y. Ca. **$1,024,205**, Contr. 1002-2T-11, trunk sewer line, Malverne to New Hyde Park, MINEOLA, N. Y. Bd. Supvrs. Nassau Co., Old Court House, Franklin Ave., Mineola, N. Y. Bids Sept. 25. CD 10/3, under LB.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 N. Office Bldg., Harrisburg, Pa.:

Burrell Constr. & Supply Co., New Kensington, Pa., LB **$94,906**, build up and surf. 8,773 ft. existing roadway with crushed aggregate base and bit. surf. T. R. 31, Westmoreland Co.;

N. B. Putman Co., Honesdale, Pa., LB. **$561,090**, construct 28,633 ft. roadway with crushed aggregate base and bit. surf. T. R. U. S. 6, Wayne Co.;

Brown, Davis & White, Box 203, Lebanon, Pa., LB **$198,999**, widn. 14,811 ft. roadway with crushed aggregate base and bit. surf. new and existing base. T. R. 44, Potter Co.;

Paul L. Britton, Inc., Box 27, Linesville, Pa., LB **$66,807**, construct 4,020 ft. roadway with crushed aggregate base and bit. surf. L. R. 25062 (1), Erie Co.;

H. J. Williams & Co., York, Pa., LB. **$1,584,497**, construct 16,020 ft. concrete pavement Turnpike Feeder Road sect. between Colonial Park and Oakleigh, L. R. 268 (1-B), Dauphin Co. Bids Nov. 9. CD 10/22.

▲ **Ranallo Contr. Co.**, 50 26th St., Pittsburgh, Pa., CA: **$1,000,000**. 1 story, steel hangar, BEAVER, PA. Bd. Comrs., Beaver Co., Beaver, Pa. Michael Baker & J. F. Bontempo, Rochester, Pa., archts.

▲ **Lawrence E. Pilot & Sons**, 30th Street Station, Phila., Pa., CA: Total cost **$9,000,000**, expansion and modernization inactive FREIGHT YARDS, incl. laying 150,000 ft. of new track, taking up and shifting 208,000 ft. existing track, MORRISVILLE, PA. Pennsylvania Railroad, J. L. Gressitt, ch. engr., Broad St. Station Bldg. 1617 Pennsylvania Blvd., Phila 4, Pa. CD 1/12/49.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Paul Tishman Co., Inc.**, 595 Madison Ave., New York, Zone 22, LB, **$7,587,490**, general constr.;

Harry Starkman & Bros., 348 Brook Ave., New York 54, N. Y. LB **$1,149,182**, heating and ventilating;

John G. Heilman & Co., Inc., 391 Fulton St., Brooklyn 1, N. Y. LB **$646,990**, electrical work.

Far Plumbing Co., 2108 Crotona Parkway, New York 60, N. Y. LB **$1,279,420** plumbing for Bronxdale Houses Proj. No. NY-5-22 in area bounded generally by Watson, Leland and Soundview Aves. and Bruckner Blvd., Bronx Boro, NEW YORK, N. Y. New York City Housing Auth., 250 Park Row, New York 38, N. Y. Bids Nov. 9. CD 11/3.

Kemeny, Klimar & Shapik, 319 Merchant St., Ambridge, Pa., LB **$846,500**, 100-family, 2 story, bsmnt., 25x112 ft. HOUSING, ALIQUIPPA, PA. Beaver Co. Housing Auth., Beaver, Pa. Ackley, Bradley, Patterson & Burgemer, Sewickley, Pa., archts. CD 7/10, under LB.

▲ **Wilcox Constr. Co.**, 29-28 41 St., Long Island City, N. Y., **James McHugh Co., Inc.**, 449 S. Park Ave., Chicago, Ill. and **Crump, Inc.**, 4031 Bigelow Blvd., Pittsburgh, Pa., CA: **$1,375,000**, parking GARAGE, Contr. B-1; CA: **$1,925,000**, parking GARAGE, Contr. F-1, PITTSBURGH, PA. Pittsburgh Parking Auth., City County Bldg., Pittsburgh, Pa. CD 9/10, under LB.

Brisker & Capitelli, 38 and Bunker Hill Rd., Brentwood, Md. Owner Builds. **$600,000**. one hundred 1 story, 25x33 ft., brick, cinder block RESIDENCES. Vier Mill Rd., Wheaton, BRENTWOOD, MD. John D'Epanier, 1004 Ripley St., Silver Spring, Md., archt.

P. F. Dulaney, 216 C St. N.W., Wash., D. C. CA **$651,398**. 2 story, 224x337 ft., brick, cinder block Hillcrest Heights Elementary SCHOOL, Silver Hill, UPPER MARLBORO, MD. Prince Georges Co. School Bd., Court House, Upper Marlboro, Md. CD 10/30, under LB.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

† **VIRGINIA**—B.A. 11/30—Bureau P. Rd., Dpt. Commerce, 1440 Columbia Pike, Arlington,

Page, Rockingham and Greene Counties—18,600 tons Type H-1 asph. pavement, liquefier type, etc. 10.06 mi. Proj. 1B7C5, Shenandoah National Park, from approx. ¼ mi. south of Bootens Gap to Swift Run Gap.

BIDS ASKED—BUILDINGS

Ga., Cartersville—HOUSING—B.A. 11/29—Cartersville Housing Auth., Cartersville, 110 housing units $850,000. Plans deposit $50. Extended date. Francis M. Daves, 57 B St., N. E., Atlanta, archts. CD 9/18.

Ky., Danville—HOUSING—B.A. 11/29—Danville Housing Comm., Danville, Housing Projs. Ky. 14-1 and Ky. 14-2. $500,000. CD 11/20/50.

Ga., Pelham—HOUSING—B.A. 12/4—Pelham Housing Auth., Pelham, 70 housing units, $550,000. Robert O. Bradley & Co., 110 Radium Springs Rd., Albany, archts. CD 8/23/50.

▲ **Ala., Tuscaloosa**—HOUSING—B.A. 12/5—Tuscaloosa Housing Auth., Tuscaloosa, 340 housing units. $3,000,000. Extended date. Wm. I. Rosamond, Propst Bldg., Columbus, Miss., archt. CD 8/9.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Acme Constr. Co.**, 271 N. Royal St., Mobile, Ala., LB, **$556,748**, ammunition area addn., EGLIN, AIR FORCE BASE, FLA. U. S. Eng., P. O. Box 1169, Mobile 7, Ala. Bids Oct. 23. CD 10/5.

HIGHWAYS

LOW BIDS AND CONTRACTS

▲ **LOUISIANA**—State Hy. Dpt., Highway Office Bldg., Baton Rouge.

Barber Brothers Co., 2636 Dougherty Dr., Baton Rouge, La. LB **$266,057**, grav. or alternate soil surf. tr. (asph. cement) 7.301 mi. Walker-Oldfield and Corbin-Northcutt Hys., State Rtes. 338 and C.2045, S. P. 26B 02-02 and 852-25-01, Livingston Parish;

Forcum-James Co., 1565 Choctaw Dr., Baton Rouge, La. LB **$290,715**, grading, timber bridges, soil cement base course, bit. surf. tr. 7.182 mi. Stacy-Monterey Hy., State Rte. 1495, S. P. 355-01-02, Concordia Parish;

T. J. James & Co., Inc., Ruston, La. LB **$729,486**, grading, drainage structures, or alternate grav. base course, bit. surf. tr. 10.003 mi. Thornwell-Lake Arthur Hy., State Rte. 98, F. A. Secondary Proj. S 175 (1), S. P. 196-03-07 and 196-04-04, Jefferson Davis Parish;

White Constr. Co., 1735 Fullerton Ave., Chicago, Ill. LB **$671,878** grading, widn. b. conc., bridges and culverts 14.126 mi. Rayne-Lafayette Hy., State Rte. 2, F. A. Proj. F 215 (3) and FI 215 (3), S. P. 3-10-03 and 3-11-10, Acadia and Lafayette Parishes.

W. H. Patterson & Co., Arbutus Standard Heights, Baton Rouge, La. LB **$154,311**. grav. base or alternate soil cement base course or crushed stone, timber trestle bridges, 5.999 mi. Chatham-Columbia Hy., State Rte. 17, S. P. 68-03-06, Jackson Parish. Bids Oct. 31. CD 10/15 and 10/17.

W. H. Patterson & Co., Arbutus Standard Heights, Baton Rouge, La. LB **$176,870**. paving 7 streets, BATON ROUGE, LA. City, City Hall, Baton Rouge. Bids Oct. 31. CD 6/29/50.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Charles H. Tompkins Co.**, 907 16 St. N.W., Wash., D. C., LB, **$2,133,081**, Cnemical PLANT at Army Chemical Corps Depot, NATRIUM, W. VA. U. S. Eng., 237 Fourth Ave., Huntington, W. Va. Bids Nov. 7. CD 10/19.

MIDDLE WEST

SOON LETS CONTRACT—BUILDINGS

Ill., Evanston—DORMITORY—Northwestern University, 607 Clark St., soon lets contract 4 story, reim.-con., brick, stone girls dormitory. Margaret Bowen Shepard Hall, $400,000. Holabird & Root & Burgee, 180 N. Wabash St., Chicago, Zone 1, archts. CD 10/17.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Smith Constr. Co.**, 1936 Glenwood Ave., Youngstown, O., CA. **$260,000**. fuel storage facilities for jet fighter air base;

Rudick & Kreidler Co., 67 Roslyn Ave., Youngstown, O., CA. **$400,000**, readiness hangar;

Christopher Constr. Co., 40 W. Gay St., Columbus, O. CA. **$500,000**, sewage disposal plant, sewers, water lines;

Allegheny Asphalt & Paving Co., Bingham and 8 Sts., Pittsburgh, Pa., CA. **$80,000**, base roads and drains;

Bayliss & Ramey, 115 Court St., Charleston, W. Va., CA, **$100,000**, power facilities, sub-station;

Mosser Constr. Co., 122 S. Wilson Ave., Fremont, O. CA **$62,000**, water treatment plant;

G. F. Howard Constr. Co., Canfield, O., CA. **$725,000**, squadron operations bldg., infirmary, mess hall, administration bldg., 3 dormitories;

W. B. Gibson Co., Warren, O., CA. **$550,000**, readiness bldg., crash and fire station, alert hangar all foregoing at Youngstown Municipal Airport, YOUNGSTOWN, O. U. S. Eng., 237 Fourth Ave. Huntington 18, W. Va. Grand total $2,677,000.

BUILDINGS

LOW BIDS AND CONTRACTS

Haig M. Boyajohn & Assoc. Inc., 990 W. Third St. Columbus, O., LB. **$969,300**. HEALTH and SAFETY CENTER on west bank of Scioto River, COLUMBUS, O. City, Elmer A. Keller, Service Dir., City Hall, Columbus, O. Bids Oct. 30. CD 5/22/50.

▲ **Oakland Constr. Co.**, Oakland Park, Columbus, O., Owner Builds. **$5,000,000**. 500 unit APARTMENT to be known as Van Buren Village east of Smithville Rd. south of Patterson Rd., DAYTON, O.

▲ **DeBartolo Constr. Co.**, 216 Alexander Ave., Youngstown, O., CA. Approx. **$1,250,000**. L-shaped SHOPPING CENTER, S. Main St. with parking for 800 cars, WARREN, O. Warren Shopping Center, Inc., c/o Edward DeBartolo, Jr., contractor.

▲ **Rouge Realty**, 14528 W. Chicago St., Detroit, Mich. Owner Builds. **$4,000,000**. 362 brick, frame HOUSES, Merriman St. Section, LIVONIA, MICH.

▲ **Procon, Inc.**, 310 S. Michigan St., Chicago 4, Ill. CA **$2,000,000** toluene and benzine PLANT, MOUNT PLEASANT, MICH. Roosevelt Oil & Refining Corp., Mount Pleasant, Mich. Universal Oil Products Co., 310 S. Michigan St., Chicago 4, Ill., engr. Awarded Nov. 2. CD 11/8.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **Colo., Boulder**—B.A. 11/30—Atomic Energy Comm., P. O. Box 5400, Albuquerque, N. M., roads, parking areas and bridge at Rocky Flats. $300,000-$400,000. Austin Co., 1300 Glenarm Pl., Denver, engr. and archt.

† **Tex., Kelly Air Force Base**—WAREHOUSE—B.A. 12/6—U. S. Eng., 606 Santa Fe Bldg., Galveston, 80,000 sq. ft. frame, const. Type "2" warehouse, Inv. No. ENG 41-243-52-31. Approx. $500,000. Extended date. CD 10/30.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects invloved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

BIDS ASKED—BUILDINGS

▲† Tex., Fort Worth—SHOPS, etc.—B.A. 11/29—U. S. Eng., Procurement Div., 8 and Commerce Sts., Fort Worth, Classification and M.H.E. shops, $800,000; rein.-con. airport apron, $145,000; box and crate shop, $275,000 for Quartermaster Depot. CD 12/28/50.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Arthur H. Neumann & Bros., Inc., 514 Hubbell Bldg., Des Moines, Ia., CA, Total cost, $8,000,000, constr. footings and cooling tower base, at electric generating PLANT, EDDYVILLE, IA. Iowa Southern Utilities Co., Centerville, Ia. CD 3/19.

▲ Star Constr. Co., 1440 N. W. 21 St., Miami, Fla. Owner Builds. $15,000,000. 1,500 HOUSING units, on 600 acre site, HICKMAN MILLS, MO.

▲ Jayhawk Constr. Co., 812 Adams St., Topeka, Kan. Owner Builds: $1,000,000. 107 HOUSES in Sunset Hill site, LAWRENCE, KAN.

O. D. Milligan Constr. Co., Manhattan, Kan. LB $985,000. general contract;

Woodhull Plumbing Co., Manhattan, Kan., LB $391,082, heating and plumbing contract for HOSPITAL, MANHATTAN, KAN. Riley Co., Manhattan, Kan. Bids Oct. 30. CD 10/5.

▲ Henry C. Beck Co., 1st Natl. Bank Bldg., Dallas, Tex. and H. R. Henderson & Co., Marshall, Tex., CA. Approx. $45,000,000. addnl. ALUMINUM PLANT, near GREGORY, TEX. Reynolds Metlas Co., c/o Lloyd A. Amos, mgr., Hunt Bldg., Gregor, Tex. CD 10/24.

E. J. Burke & Sons, 4220 S. Zarzamora St., San Antonio, Tex., Force Account. $760,000. 100 DWELLINGS, SAN ANTONIO, TEX. CD 11/3/49.

FAR WEST

BIDS ASKED—BUILDINGS

Calif., Lathrop—HOUSING—B.A. 12/4—U. S. Eng., 180 New Montgomery St., San Francisco, construct, manage finance, 96 housing units. Inv. 136-80005-Army 1 at Lathrop, $430,000; and at Tracy Annex, Inv. 136-80006-Army 2, $500,000. Plans deposit $25. CD 3/15/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ † Premier Gear & Machine Works, 1700 N. W. Thurman St., Portland, Ore., LB. $1,429,918, fish collection system, machinery gates and stop logs for McNary Dam, Inv. 52-20, McNary Dam, OREGON. U. S. Eng., Bldg. 602, City-County Airport, Walla Walla, Wash. Bids Nov. 6. CD 10/23.

† Pacific Dredging Co., 14409 S. Paramount Blvd., Paramount, Calif., CA. $888,800, 2,000,000 cu. yd. hydraulic fill, Spec. 31552, POINT MUGU, CALIF. Dpt. Navy, Air Missile Test Center, Point Mugu, Calif. Bids Sept. 20, awarded Nov. 6. CD 9/27, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Milton Kauffman Constr. Co., 2918 W. Compton Ave., Gardena, Calif., LB. $1,347,500, low rent HOUSING. Proj. Calif. 4-17, 26 two story, frame, stucco buildings, San Pedro, LOS ANGELES, CALIF. Housing Authority of City of Los Angeles, 1401 E. First St., Los Angeles, Calif. Bids Nov. 6. CD 10/22.

▲ Maino Constr. Co., 2238 S. Broad St., San Luis Obispo, Calif., LB $1,803,700, general contract bldgs. at Paso Robles SCHOOL for Boys, PASO ROBLES, CALIF. State Div. Architecture, P. Wks. Bldg., Sacramento, Calif. Bids Nov. 6. CD 10/8.

▲ Bauer Constr. Co., 309 S.W. 6 Ave., Portland, Ore., LB, $4,488,900, construct, manage and finance 250 HOUSING units under Serial 121-80004, Army at Presidio of San Francisco, SAN FRANCISCO, CALIF. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids Nov. 6. CD 10/19.

Alliance Constr. Co., 35 N. Raymond St., Pasadena, Calif., LB, $879,890, 2 story, rein.-con. SCIENCE BLDG., SANTA MONICA, CALIF. Santa Monica City High School Dist., 1333 6 St., Santa Monica, Calif. Bids Nov. 7. CD 10/23.

CANADA

BUILDINGS

LOW BIDS AND CONTRACTS

▲ E. G. M. Cape & Co., 620 Cathcart St., Montreal, Que., CA, Total est. $4,000,000. 4,000 ton asbestos MILL, part of expans on project, Black Lake Mine, BLACK LAKE, QUE. Johnson's Asbestos Co. Ltd., Black Lake, Que. 2/6.

PROPOSED PROJECTS

WATER SUPPLY

▲ Fla., Tampa—City, water reservoir, $568,819; 4 filter units, $272,262; water mains, $2,838,550. Robert & Co. Assocs., 96 Poplar St. N. W., Atlanta, Ga., consult. engrs. CD 7/20/45.

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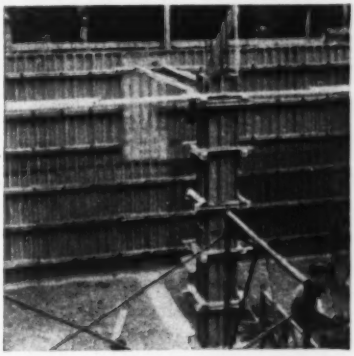

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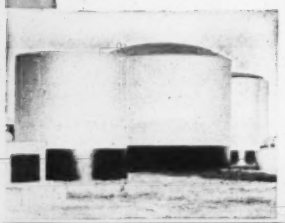

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BUCYRUS, OHIO

▲ Ga., Columbus—City, City Hall, WW imprvs. $2,000,000.

Ga., Macon—Macon Bd. Water Comrs., extend water distr. lines from Riverside Pumping Station into city areas, $900,000. Wiedeman & Singleton, Box 1879, Atlanta, consult. engrs.

Tex., Harlingen—City, No. 1, clear water well, $110,000; No. 2, new cl. water mains, $125,000; No. 3, water distr. lines, $175,000; No. 4, elevated steel tank and towers, $75,000; No. 5, complete WW sys. rehabilitation, $160,000. Sigler, Clark & Winston, P.O. Box 428, Wesaco, consult. engrs. CD 10/25.

Tex., Kilgore—City, water mains, incl. runs into new building areas, $315,000; steel elevated tank and tower, $150,000; drilling and completion 6 water supply wells, $210,000; water distr. and lateral lines, general pipe rehabilitation, $200,000. A. P. Noyes, Kilgore, consult. engr. CD 10/23.

Va., South Boston—City, filtration plant, $750,000. Wiley & Wilson, Lynchburg, consult. engrs.

SEWERS, WASTE DISPOSAL

Calif., El Cajon—City, 235 Highland Ave., voted $600,000 bonds, sewage treatment plant. CD 10/9.

▲ Calif., Los Angeles—City, City Hall, sewers in Fulton Ave., Victory to Magnolia Ave., $100,000; sewers in Lankershim Blvd., Tuxford to Van Owen Blvd., $200,000; sewers in Sepulveda Blvd., Nordhoff St. to Raymer St., $100,000, all foregoing San Fernando Valley Area; sewers in Weed Canyon, Lake Hollywood to Cahuenga Blvd., $100,000; Miramar Dr., and Gould Ave. Sewer District, $100,000, all foregoing Hollywood Area; Indiana Court and 4 Ave., $150,000; California Court and Electric St. Sewer, $180,000; Brooks Ave. and 5th Ave., Sewer, $200,000; Culver Blvd., and Inglewood Sewer District, $125,000, all foregoing Venice Area; Sunland-Tujunga Interceptor Sewer, $500,000; Dilling St. Los Angeles River Interceptor Sewer, $60,000. L. Aldrich, city engr.

Kan., Chanute—City, voted $445,000 bonds Oct. 31, sewage constr.

▲ Mass., Boston—State, Metropolitan Dist. Comn., Constr. Div., 20 Somerset St., sewage treatment and disposal plant, Deer Island, $19,000,000. CD 5/12/44.

Mass., Worcester—City, City Mgr's office City Hall, sewage pumping station, $350,000; force main, $100,000; gravity, $25,000, Camp, Dresser & McKee, 6 Beacon St., Boston, consult. engrs. CD 7/24.

Nev., Sparks—City, City Hall, sewage treatment plant, $415,000 bond election planned. Clyde C. Kennedy, 604 Mission St., San Francisco, Calif., consult. engr.

▲ N. Y., Brooklyn—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, 4 story South Shore Destructor Plant on site bounded by Fortbell St., Wortman Ave., Drew St. and Cozine Ave., Proj. S-123. $4,500,000.

▲ R. I., West Warwick—Town, Town Hall, plans by Jenks & Ballou, 2600 Industrial Trust Bldg., Providence, sewerage sys. addn. $1,200,000.

BRIDGES

▲Calif., Los Angeles—Bd. Supervs. Los Angeles Co., Hall of Records, Los Angeles, rein.-con. bridge over San Gabriel River, on Washington Blvd., Whittier, $300,000; rein.-con. bridge on Malibu Canyon Rd. near Malibu Creek, Malibu, $271,000; rein.-con., bridge over the Rio Hondo, on Slauson Ave., Rivera, $360,000; steel girder bridge at Garfield Ave. underpass, Montebello, $120,000. S. R. Kennedy, road comr. CD 9/29/45.

STREETS AND ROADS

▲ Alabama—State Hy. Dpt., Montgomery, bond election Dec. 11, imprv. roads in counties throughout state, $25,000,000.

Calif., Los Angeles—City, City Hall, wid'n, 9,100 ft., 500,000 sq. ft., 8 in. concrete Lankershim Blvd., $350,000; wid'n., resurf. Ave. 19 and Lacy St., $60,000. Lloyd Aldrich, city engr. CD 1/15/45.

▲ Okla., Oklahoma City—Oklahoma Co., Court House, bond election Dec. 11, roads and arterial highways, $6,327,000. C. W. McFerron, co. engr. CD 10/16.

EARTHWORK, WATERWAYS

Calif., Palmdale—Palmdale Irrigation District, Ave. Q-7, imprv. domestic sys., incl. wells, 10 mi. trunk line, etc., $414,000. Warren O. Wagner, 738 E. Walnut St., Pasadena, consult. engr.

AIRPORTS

▲† Ariz., Tucson—BARRACKS, etc.—U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif., barracks, $5,000,000; building and utilities OQ gunnery range, $250,000; airfield lighting (approach), $500,000; armament electronic repair shop, $500,000; water supply and storage, $500,000; ammunition storage area $500,000; motor pool, $500,000; warehousing, $1,000,000; utilities, $1,000,000; strengthen apron, $1,000,000; railroads and roads, $500,000; electric power, $500,000; wing and group headquarters bldg., $1,000,000; hydrant refueling, $1,000,000; base operations control tower, $500,000; storage for classified material, $100,000; navigational and facilities, $250,000, all at Davis-Monthan Air Force Base. CD 5/21.

▲† Calif., Muroc—ROADS, etc.—U. S. Eng., 751 S. Figueroa St., Los Angeles, roads for service bldgs., $250,000; officers mess $250,000; commissary store and warehouse, $250,000; refrigeration warehouse, $250,000; A/C supply warehouse and railroad spur $1,000,000; laboratory and dangerous waste disposal, $1,000,000; B O Q $1,000,000; cafeteria, B O Q and recreation bldg. $500,000; dental clinic, $250,000; electrical utilities, $1,500,000; Q M Warehouse, $250,000; airmens club $500,000; troop housing $1,000,000; vehicle maintenance facilities, $1,000,000; central kitchen, $250,000; telephone bldg., $500,000; roads and streets, $1,000,000; crash and fire station, $500,000; sewage treatment plant, $1,000,000; Instrumentation and Records PROC Laboratory, $1,000,000 technical engineer administration bldg., $1,000,000; water wells $100,000; sewer system, $500,000; gas system, $1,000,000; gas facilities $500,000; unconventional fuel storage, $1,000,000; steam, electric sewer, water system $1,000,000; central boiler plant and steam distr. system, $1,000,000; water system, $1,500,000; backfill mud mines, $1,000,000; post bakery $100,000; cafeteria, $250,000; railroad spur $500,000, all at Edwards Air Force Base. CD 4/5.

▲† Calif., Victorville—BARRACKS, etc.—U. S. Eng., 751 S. Figueroa St., Los Angeles, California, barracks, $1,000,000; runway and taxiway extension, $500,000; wing headquarters and communications bldg., $500,000; utilities, $500,000; readiness bldg., $250,000; cold storage and meat cutting facilities, $100,000; airfield lighting, $250,000, all at George Air Force Base. CD 4/5.

▲† Idaho, Mountain Home—COLD STORAGE BLDG., etc.—U. S. Eng., City-County Airport, Walla Walla, Wash., plans by C. Allen, Pocatello, cold storage bldg., base operations unit, photo lab, crash fire station and parachute bldg.; plans by G. Stanton, Concord Bldg., Portland, Ore., training bldg.; plans by R. L. Morin, Pub. Service Bldg., Portland, Ore., laundry and dry cleaning unit; plans by M. P. Williams, Sherlock Bldg., Portland, Ore. warehouse and special vehicle bldg., all at Air Force Base. CD 9/18.

▲† Mont., Great Falls—WAREHOUSES, etc.—U. S. Eng., City-County Airport, Walla Walla, Wash., plans by Orr Pickering & Assoc., Billings, warehouses; plans by G. H. Shanley, First National Bank Bldg., base operations bldg. and 66 ft. control tower; plans by Naramore, Bain, Brady & Johanson, 904 7 Ave., Seattle, Wash., bachelor officers' quarters for 300 men, $300,000, barracks for 1,620 airmen, $1,000,000 Great Falls Air Force Base. CD 9/19.

† Wash., Moses Lake—REFUELING SYSTEM, etc.—U. S. Eng. Bldg. 602, City County Airport, Walla Walla, plans by R. M. Parsons, 617 S. Olive St., Los Angeles, Calif. 8—hydrant refueling system, $480,000; plans by J. Villesvik, Yakima, Wash., A10 shops and offices and motor repair shop; plans by Western Eng. & Consultants, Inc., Arctic Bldg., Seattle, Zone 4, locomotive shop and repair bldg., at Larson Air Force Base.

▲† Wash., Tacoma—BARRACKS, etc.—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, W., plans by Miller & Ahlson, 1410 Hubbie Pl., Seattle, Wash., barracks for 1,820 men, $1,000,000; plans by Jensen & Mills and D. M. Hopkins, Tacoma, meat-cutting plant, A10 warehouse and shops; plans by C. Arnold, New World Life Bldg., Zone 44, W. rocket storage and 6 bomb storage area; plans by R. L. Durham & Assocs., 1100 Denny Way, Seattle, Wash., motor maintenance shop and warehouses A, D and C. at McChord Air Force Base. CD 7/27.

▲† Wyo., Cheyenne—AIR BASE—U. S. Eng., 1709 Jackson St., Omaha, Neb., barracks at Air Force Base, $3,900,000. J. T. Banner & Assocs., Converse bldg., Laramie, consult. engrs.

▲† Alaska—LOCOMOTIVE SHED, etc.—U. S. Eng., APO 942, c/o PM, Seattle, Wash.) Anchorage, plans by Alaska Architecture & Eng. Co., Fairbanks, locomotive shed; plans by L. Bouillon & Assoc., 1411 4th Ave. Bldg., Seattle 1, Wash., access road, etc.; plans by Whitehouse & Price, Hutton Bldg. Spokane, Wash., auto maintenance facilities, Eielson Air Force Base. CD 9/11.

LATIN AMERICA

▲ Mexico—Puebla Govt., Gen. Rafael Avila Camacho, Gov. Palacio del Estado, Puebla, plans 4 local roads linking Puebla and Tlaxcala states, $1,150,000.

▲Mexico, Monterrey—Hojalata y Lamina, c/o Roberto Sada, Monterrey, plans 328 dwellings, $2,600,000; 275 dwellings, $2,200,000; school, $325,000; public shopping bldg. units, $300,000.

▲ Mexico, Monterrey—Cuauhtemoc Brewery, c/o R. Garza Sada, Monterrey, plans shopping public bldg. unit, $350,000; 250 dwellings, $2,000,000; 300 dwellings, $2,400,000; school and playgrounds, $400,000.

▲ Mexico, Nuevo Leon—Cia. Fundidora de Fierro y Acero de Monterrey, S. A., plans steel mills and other bldgs. $5,780,000.

▲ Mexico, Tampico—Sria. de la Marina (Navy Dpt.), Mexico City, plans Navy Base, $1,380,000. Alberto J. Pawling, c/o owner, engr.

PUBLIC BUILDINGS

▲ Calif., Los Angeles—LIBRARY—Bd. Law Library Trustees, Hall of Records, plans by Austin, Field & Fry, 2311 W. 3 St., 4 story, rein.-con. law library, $1,200,000. CD 6/27/45.

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Calif., National City—SCHOOL FACILITIES—National City School Dist., National City, voted $620,000 bonds, school facilities. CD 10/9.

▲† Calif., Pasadena—STOREHOUSES, etc:—U. S. Eng., 751 S. Figueroa St., Los Angeles, 5,000 sq. ft. storehouse, $100,000; Receiving and Shipping Warehouse 126, $100,000; Fabrication Shop 103 addn., $100,000; shops, docks, incinerator and brush coating bldgs., $250,000; Guidance and Control Telemetering and Instrument Development Laboratory Bldg. 125, $500,000; sewage disposal system, $100,000; electrical distr. facilities, $100,000; power, light, gas, water distr. and connections, $100,000; alt at California Institute of Technology. CD 10/26/48.

▲ Calif., Richmond—OFFICE—Bd. Supervs., Contra Costa Co., Court House, Martinez, plans by Donald L. Hardison, 225 Broadway office bldg. in Richmod Civic Center. $1,455,000. CD 12/8/50.

▲† Calif., San Francisco—BARRACKS, etc.—Twelfth Naval Dist., Federal office Bldg., plans by Angus Mc Sweeney, 514 Mission St., barracks, galley, mess hall, etc. at Treasure Island Naval Station. $5,000,000.

▲ Calif., South Pasadena and San Marino—HIGH SCHOOL—South Pasadena and San Marino High School Dist., $2,200,000 bond election Dec. 11, high school constr. CD 1/30/46.

▲ Calif., Whittier—HIGH SCHOOL—Whittier Union School Dist., 215 S. Hadley St., voted bonds, high school facilities, $1,850,000; Wm. H. Harrison, 816 W. 5 St., Los Angeles, archt. CD 10/18.

Conn., Meriden—SCHOOL—City Bd. Educ., Meriden, brick, steel, concrete school, $500,000. CD 2/25/49.

▲ Fla., Bartow—SCHOOLS—Bd. P. Instruction, Polk County Bartow bond election Dec. 18, Lakeland Senior High School addns., $444,000; Rochelle Junior and Senior High School, $446,500; Oakland Park School, $356,260; Auburndale High School, $385,560; Mulberry High School for Whites, $430,000; Mulberry High School for Negroes, $377,000; Lake Wales Elementary School $300,000.

▲ Ga., Valdosta—HOUSING—Valdosta Housing Auth., Valdosta, approx. 3,500 housing units to house personnel at Moody Air Force Base and new paper mill, $19,000,000; Smith & Gillespie, 121 E. Forsythe St., Jacksonville 2, Fla., consult. engrs.

▲ Idaho, Boise—HOSPITAL—State Dpt. P. Health, State House, T. B. hospital, $1,000,000.

Ill., Rock Island—HOSPITAL, etc.—Bd. Supervs. Rock Island Co., Court House, plans by M. R. Beckstrom, Reliance Bldg., Moline, Ill., 1 story, 42x396 ft. convalescent hospital wing and two 40x72 ft. secondary wings, and 2 story, basmnt. 50x133 ft. service wing, connecting with present facilities, $750,000, bonds voted. CD 9/2.

▲ Ia., Marshalltown—SCHOOLS—Bd. Educ., Marshalltown, plans by Dougher, Rich & Woodburn, Garver Bldg., Des Moines, Woodbury School, $500,000; Rogers School, $500,000. CD 4/20/49.

▲† Md., Cheltenham—BARRACKS and FACILITIES—Dpt. Navy, Pub. Wks. Officer, Naval Gun Factory, Wash., D. C. plans by Deigert & Yerkes, 3211 O St. N. W. Wash., D. C., radio station facilities, $1,059,000; plans by A. Hamilton Wilson, 1022 20 St. N. W., Wash., D. C. and Wm. A. Denton, 1719 Eye St., N. W., Wash. D. C., quarters, barracks and mess facilities, $610,000 at Naval Communications Station.

† Md., Forest Glen—RESEARCH LABORATORY, etc.—U. S. Eng., First and Douglas Sts. N. W., Wash., D. C., plans by Justement, Elam & Darby, 2011 K St. N. W., Wash., D. C., 1 story, brick, concrete animal house, research laboratory and hazardous occupation bldg., $600,000. Merle Hobbs, 2011 K St. N. W., Wash., D. C., struct. engr. Maurice C. Carson, 1401 Monroe St., N. W., Wash., D. C., mech. engr. CD 11/3.

▲ Mass., Methuen—SCHOOL—Town, Supt. Schools, plans by Edmund L. Leeds & Assoc., Inc., 153 Brighton Ave., Allston, high school, Pleasant St., $1,800,000. CD 6/4/45.

▲ Mass., Wellesley—MAINTENANCE—State, Dpt. P. Wks., 100 Nashua St., Boston, plans by A. J. Carpenter, 236 Huntington Ave., Boston, maintenance bldg., Junction Rtes. 128 and 9, $1,750,000.

Minn., Alexandria—SCHOOL—Bd. Educ., A. Hafdal, supt., $585,000 bond election Nov. 26, school, F. V. Traynor, St. Cloud, archt. CD 5/24/45.

▲ Minn., New Brighton—SCHOOLS—Bd. Educ., R. H. Reeder, supt. Schools, $2,500,000 bond election Nov. 13, Junior-Senior High School, Arden Hills, est. $1,000,000, grade school addn., New Brighton, est. $300,000, and purchase of sites.

▲† N. M., Los Alamos—LABORATORY—U. S. Atomic Energy Comn., Los Alamos, plans by Ralph M. Parsons Co., 617 S. Olive St., Los Angeles, Calif., 75,000 sq. ft. rein.-con. structural steel, metal siding laboratory bldg., outside grading, paving, utility sys., Inv. 291-52-29. Approx. $2,500,000-$3,000,000.

▲ N. Y., New York—HOUSES—New York City Housing Auth., 63 Park Row, Zone 38, plans by Starrett & Van Vleck & Reginald E. Marsh, 267 Fifth Ave., Zone 16, Triborough Houses, eight 7 story bldgs. and fourteen 16 story bldgs. for 2,158 families on site bounded by Second Ave., 120 St., Franklin D. Roosevelt Dr. and Triborough Bridge approaches, $31,168,000.

▲ N. Y., New York—HOUSING—New York City Housing Auth., 63 Park Row, Zone 3E, plans by Alfred Hopkins & Assoc., 415 Lexington Ave., Zone 17, George Washington Houses, fourteen 14-story bldgs. for 1,515 families on site bounded by 2 and 3 Aves., E. 97 and E. 104 Sts. $20,389,000. CD 9/8/50.

Okla., Oklahoma City—HIGH SCHOOL—Oklahoma Co., bond election Dec. 11, Negro High School $900,000. Hudgins, Thompson & Ball, 1100½ Main St., archts. CD 5/2/49.

▲ Tex., Beaumont—HOUSING—Beaumont Housing Auth., Beaumont, plans by Stone & Pitts, 1872 Calder St., 35 bldgs. for total 200 housing units, 1 and 2 story, wood frame, brick exterior constr. $2,000,000. CD 1/6/50.

▲ Tex., San Antonio—ELECTRIC GENERATING UNIT—City Public Service Bd. 201 N. St. Marys St., addnl. electric generating power unit, near Short's Corner on Siado Creek, 60,000 to 90,000 kw. $6,000,000-$10,000,000. Gibbs & Hill, Inc., 450 7th Ave., New York, N. Y., consult. engr. CD 8/3.

▲† Wash., Fort Lewis—BARRACKS, etc.—U. S. Eng., 4735 E. Marginal Way, Seattle, 4, Wash., J. L. Holmes & Assocs., Times Square, Seattle, Zone 1, two 225-man barracks, $600,000; thirty 165-man barracks, each $500,000; eight 105-man barracks, each, $400,000; two 25-man bachelor officers' quarters 8-unit battalion headquarters, 3 staff fire station; plans by Harman, Pray & Detrich, Securities Bldg., Seattle, Zone 1, 16 motor repair shops, 8 gas stations, 8 motor disp. offices, 16 oil storage bldgs., 32 vehicle wash racks and 17 vehicle grease racks; utilities, clearing, grading roads, electric system, sewer and water system, Western Eng. & Consultants, Arctic Bldg., Seattle, Zone 4, consult. engrs.; plans by G. W. Stoddard & Assocs., 1213 Westlake Ave. N., Seattle, specialist training school; plans by Naramore, Bain, Grady & Johnanson, 904 7 Ave., Seattle, post stockade and guardhouse, plans by G. Eckvall, Olympia, chemical field maintenance shop. CD 7/27, under Wash., Tacoma.

▲ W. Va., Charleston—SCHOOLS—Kanawha Co. Bd. Educ., Charleston, bond election Nov. 27, Cedar Grove Junior High School, $650,000; Dunbar Senior High School, $700,000; Kanawha City High School, $350,000; Nitro Elementary-High School, $1,225,000; St. Albans Senior High School, $900,000; Spring Hill Junior High School, $500,000.

Wis., Waukesha—HOSPITAL—Waukesha County plans by Foss-Jansma, Inc., 625 N. Milwaukee St., Milwaukee, Zone 2, 2 story, part bsmnt., 38x175 ft., county hospital addn., alterations, $750,000.

COMMERCIAL BUILDINGS

▲ Ala., Birmingham — ADMINISTRATION-CLASSROOM BLDG etc.—Howard College, 7725 2 Ave. S., administration-classroom bldg., $300,000; chemistry-physics bldg., $300,000; auditorium-fine arts bldg., $300,000; biology-pharmacy bldg., $300,000.

▲ D. C., Wash.—OFFICE—Morris Gewirz, 1001 Connecticut Ave. N. W., Wash., 25, D. C., office, $1,300,000.

▲ D. C., Wash.—HEADQUARTERS—Washington Mosque Foundation, Inc., 2310 Decatur Pl. N. W., Wash., D. C. headquarters bldg. for Moslems, $1,500,000.

Ill., Chicago—SHOPPING CENTER—Milton H. Callner Co., 209 N. LaSalle St., Zone 1, plans by Leslie J. Greenwald, 209 N. LaSalle St., Zone 1, shopping center, Milwaukee and Central Aves., $500,000.

▲ Ky., Louisville—DEPARTMENT STORE—J. Bacon & Sons, 332 W. Market St., department store, St. Matthews St. $1,000,000.

Mass., Milton—DORMITORY—St. Columban's Foreign Mission Society, Very Rev. Joseph McGlade, 1372 Bush Hill Rd., plans by Barry Bryne, 627 Dartmouth St., Evanston, Ill., 3 story, bsmnt., dormitory and classroom, $850,000.

Mass., Springfield—POST OFFICE—Louis Herman, 558 Pleasant St., Ned Bedford, plans by Tallman LaBrodie & Roundsville, 222 Union St., New Bedford, post office, $600,000. U. S. A. Postal Dpt., Wash., D. C., lessee.

▲ N. Y., New York—APARTMENTS—Knolls Co-operative, Inc., 118 E. 28 St., Zone 16, plans by Samuel J. Kessler, 118 E. 28 St., Zone 16, two 10 story apartments, Henry Hudson Parkway and Kappock St. $1,500,000.

N. Y., Rochester—STORE—B. Forman & Co., 46 Clinton Ave. S., store, $660,000.

N. Y., White Plains—OFFICE—Guardian Life Insurance Co., 50 Union Square, New York, Zone 3, office, $850,000.

O., Fremont—HOSPITAL—Bd. Trustees, Sandusky County Memorial Hospital, Fremont, 57-bed hospital addn. north of new wing with 2 wings. $800,000. CD 8/15.

O., Youngstown—COMMUNITY CENTER—Jewish Federation of Youngstown, Murray A. Nadler, pres., 646 Bryson St., plans by Morris W. Scheibel, 1301 Realty Bldg., Jewish community center bldg., Gypsy Lane. $500,000.

▲ Tex., Angleton—DWELLINGS—Whipple Constr. Co., 4015 Fernwood St., Houston, plans by Knostman & Webster, 2017 W. Gray St., Houston, 38 dwellings in new sect. of Chevy Chase addn. $300,000; 45 dwellings in an area near proposed school, $360,000; new duplexes, in an area north of the city, $350,000.

▲ Tex., Fort Worth—DWELLINGS—King & Sheets Co., City Natl. Bank Bldg., Houston, Lot 1, 100 frame type dwellings, concrete slab fdns. $700,000; Lot 2, 75 asb. siding dwellings, concrete slab fdns. $525,000; Lot 3, 90 cedar shake, frame dwellings, concrete slab fdns., $630,000; Lot 4, 60 cedar shake dwellings, concrete slab fdns. $420,000.

▲ Tex., Garland—DWELLINGS—W. Robert B. Browns & Neil I. Holm, 5322 Maple Springs St., Dallas, 125 various type dwellings, off McRee Rd. $1,125,000; 120 frame dwellings in Briley Heights, on 103 acre tract, $780,000; 80 frame, asb. siding dwellings,

west of Garland drive-in theatre, $640,000; 75 frame, masonry dwellings, off Shiloh Rd., $637,500.

Tex., Houston—DWELLINGS—Casey Cosgrove, 107 Hunt Ave., 15 two story masonry dwellings, various locations in Memorial Dr. area, $750,000. J. D. Jonnson, etc., 1303 Shaw St., consult. engrs.

Tex., Lake Jackson—DWELLINGS—King & Sheets Co., City Natl. Bank Bldg., Houston, Proj. 1, 60 frame, cedar shake dwellings, concrete slab fdns., $400,000; Proj. 2, 70 cedar shake, some frame dwellings, concrete slab fdns., $525,000.

Ont., Toronto—APARTMENT BLOCK—Owner, c/o Peter Cassan, archt., 36 Park Lawn Rd., 70 units, two 3 story, bsmt.; 48x183 ft., 106x106 ft. wings, brick apartment block, Hillside Dr. and Gamble Ave, $500,000.

INDUSTRIAL BUILDINGS

Calif., San Leandro—PLANT, etc.—General Paint Co., 2627 Army St., San Francisco; plans by Skidmore, Owings & Merrill, 1 Montgomery St., San Francisco, plant, office and laboratory, $900,000. Isadore Thompson, 583 Market St., San Francisco, consult. engr.

▲ **Calif., Richmond**—PLANT—Standard Oil Co., 225 Bush St., San Francisco, new synthetic phenol plant $4,000,000.

Ind., Lawrenceburg—POWER PLANT—Indiana-Michigan Electric Co., Colfax Ave., South Bend, 108x204 ft., brick, concrete, structural steel power plant, 125 ft. high, near here $605,000. Jean J. Casahona, c/o American Gas & Electric Service, 30 Church St., New York, N. Y., consult. engr. CD 4/21/48.

▲ **Mich., Mount Pleasant**—PLANT—Roosevelt Oil & Refining Corp., John E. Boudler, pres., Mount Pleasant, plant to produce 3,000,000 gal. benzene and 3,250,000 gal. toluene yearly, $2,000,000.

▲ **Mo., Fredericktown**—PLANT—National Lead Co., 111 Broadway, New York, N. Y., cobalt, nickel and copper separation plant, $5,000,000.

Tex., Brady—PLANT—Intercontinental Mfg. Co., Garland, assembly plant, $500,000.

▲ **Tex., Dallas**—GENERATING UNIT—Dallas Power & Light Co., Dallas Power & Light Co. Bldg., turbine electric generating unit of approx. 100,000 kw. capacity, $11,100,000. CD 10/2/50.

▲ **Tex., Dallas**—GENERATING PLANT—Dallas Power & Light Co., Dallas Power & Light Bldg., construct 90,000 kw. electric generating plant. $9,500,000.

▲ **Tex., Dallas**—OFFICE—J. N. Fisher, Gulf States Bldg., modernizing 9 story mercantile of existing bldg. into a "Merchandise Mart and Office Bldg." $5,000,000.

▲ **Wash., Everett**—PAPER MILL—Scott Paper Co., Market St., Chester, Pa., paper mill adjacent to existing sulphite plant, $17,000,000.

▲ **Wash., Seattle**—ENGINEERING—Boeing Airplane Co., 7755 E. Marginal Way, plans by J. W. Maloney, Central Bldg., Zone 4, 5 story, 200x300 ft. engineering bldg. addn., $2,500,000. CD 10/31.

Man., Winnipeg—SHOP—Trans-Canada Airlines, International Aviation Bldg., Montreal, Que., aircraft engine test shop at Stevenson Airport, $500,000.

▲ **Ont., Clarkson**—PLANT—British American Oil Co. Ltd., Bay and College Sts., Toronto, plans by N. A. Armstrong, 19 Melinda St., Toronto, 1 story grease plant at refinery with 3 story 100x250-ft. steel., rein.-con., concrete block processing and packaging section, $1,500,000. CD 8/25.

▲ **Ont., Oakville**—PLANT—Ford Motor Co. of Canada Ltd., Windsor, assembly plant on 420 acre site with 1 story, brick, steel factory and auxiliary bldgs., $45,000,000. Giffels & Vallet of Canada Ltd., Canada Trust Bld., Windsor, and Gore & Storrie, 1130 Bay St., Toronto, consult. engrs.

▲ **Ont., Red Rock**—PLANT EXPANSION—Brompton Pulp & Paper Co. Ltd., Sun Life Bldg., Montreal, Que., expansion of pulp and paper plant in northern Ontario and addnl. staff housing planned, $15,000,000. Stadler, Hurter & Co., 1117 St. Catherine St. W., Montreal, Que., consult. engrs.

UNCLASSIFIED

▲ **Texas and Louisiana**—OIL PIPE LINE—Texas Pipe Line Co., Texas Co. Bldg., Houston, Tex., crude oil pipe line gathering sys., in fields of Terrebonne Bay area, $750,000; construct 230 mi. 22 in. crude oil pipe line Houma, La., to Port Arthur, Tex. $10,200,000; 12¾ in. crude oil line, Houma to Cocodrie, La., $3,000,000.

▲ **Texas**—GAS LINES, etc.—Houston Oil Co. of Texas and Houston Pipe Line Co., Petroleum Bldg., Houston, gas gathering lines, $750,000; 76 mi. 30 in. gas transmission line, $3,500,000; 41 mi. 24 in. gas transmission line, $2,400,000; 33 mi. 18 in. gas transmission line, $660,000; vast underground gas storage facilities, $2,205,000; microwave radio communications sys. $85,000, all foregoing in Bammel Field, Harris Co., near Houston.

▲ **Texas**—GAS PIPE LINE—United Gas Pipe Line Co., c/o United Gas Bldg., Houston, 93 mi. 10 in. natural gas pipe line from near Houston to near Orange at duPont Sabine River Works, near Houston, Harris Co. $1,250,000. CD 10/3/50.

▲ **British Columbia**—PIPE LINE—Trans-Mountain Pipe Line Co., c/o Canadian Bechtel Ltd., 564 Hornby St., Vancouver, 700 mi. 24 in. pipe line from Edmonton to Vancouver through Fraser River Canyon to bridge crude oil to Vancouver, $80,000,000.

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CONSTRUCTION REPORTS-Second Section

NEW ENGLAND

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

MAINE—State Hy. Comn., State House, Augusta, Landers & Griffin, Inc., 800 Islington St., Portsmouth, N. H. CA $420,452, bit. macad; 5.721 mi. F. A. Proj. F 06-1 (1), A-5, North Berwick-Wells; Henry J. Ruch, York Village, Me., CA $111,915, bit. grav. 2.106 mi. F. A. Secondary Proj. S 0105 (1), S. A. North Berwick. Bids Nov. 7. CD 10/30.

BUILDINGS

LOW BIDS AND CONTRACTS

Frankini Constr. Co., 26 Mystic Ave., Medford, Mass. CA $623,600. HOUSING Proj. 200-2, Gardner and Freemont Sts. and Sunnyside Ave., ARLINGTON, MASS. Town Arlington Housing Auth., 2 Freemont Court, Arlington, Mass CD 11/7, under LB

Benjamin Steinberg, 9 Marie Ave., Cambridge, Mass. CA $400,000 COLLEGE SOCIAL and RECREATIONAL BUILDING, Kenmore Dist., BOSTON, MASS. Boston University, Hillel House, 755 Commonwealth Ave., Boston, Mass. Krokyn & Browne, 184 Boylston Str., Boston, Mass., archts.

▲ Country Club Homes Inc., New Britain, Conn., Owner Builds, $5,000,000, 555 single RESIDENCES, NEW BRITAIN, CONN.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

November 27, Maryland December 4 New Jersey

STREETS AND ROADS

November 27, Maryland December 4, New York

▲ N. Y., New York—B.A. 12/12—Dpt. P. Wks., Municipal Bldg., Zone 7, construct Welfare Island Bridge over east channel of East River connecting Welfare Island with Queens Boro $3,934,000. Plans deposit $50. Extended date. Knappen, Tippetts, Abbett Eng. Co., 62 W. 47 St., Zone 19, engr. CD 10/2.

† B. W. I., Bahama Islands—OBSERVATION STATIONS—Bids Asked—Bureau Yards & Docks, Dpt. Navy, 18 St. and Constitution Ave. N. W. Wash. 25, D. C., three down range observation stations, incl. observation facilities, quarters and messing facilities, power plants, fuel storage, exterior services, roads, walks, fire protection, water, sewerage and electrical facilities, Joint Long Range Proving Grounds, Spec. No. 31493. Plans deposit $70.

BIDS ASKED—BUILDINGS

N. Y., Gardnertown—SCHOOL—B.A. 11/27—Bd. Educ., Union Free School Dist. 8, Town of Newburgh, 2 Winona Ave., school, $350,000. Extended date.

N. Y., Brooklyn—HOSPITAL—B.A. 11/28—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, general constr., plumbing, heating and ventilating, electrical work and lighting for construction of an out-patient bldg., at Cumberland Hospital, N. Elliott Pl., south of Park Ave. Plans deposit $25. Extended date.

N. Y., New York—HOSPITAL IMPRVS.—B.A. 11/28—Dpt. P. Wks., Municipal Bldg., Zone 7, general constr.; pumbing; heating; yard electrical work for construction of yard work at Bird S. Coler Memorial Hospital and Home on Welfare Island, Manhattan Boro. Plans deposit $25. Extended date. CD 10/29.

N. J., Caldwell—SCHOOL—B.A. 12/3—Caldwell Twp. Bd. Educ., Caldwell, school, Route 6 and Fairfield Rd. $322,000. CD 7/6, under LB.

N. J., Livingston—SCHOOL—B.A. 12/4—Bd. Educ., Livingston Twp., 184 S. Livingston Ave., 3 school addns. $485,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Bennett & Triseo Constr. Co., 28 N. Main St., Freeport, N. Y. LB $106,527, sewers, 132, 131, 130, 67 and 64 Aves., 218, 219, 220, 232 and 233 Sts., 130 Rd., 130 Dr. Queens Boro, NEW YORK. President Queens Boro, Boro Hall, 120-55 Queens Blvd., Kew Gardens 15, N. Y. Bids Nov. 8. CD 10/31.

▲ NEW JERSEY—State Hy. Dpt., 1035 Parkway Ave., Trenton

Union Building & Constr. Corp., 631 Main Ave., Passaic, N. J., CA, $2,049,918, grading, constr. bridges and paving eastbound roadway 2.572 mi. Route 23 from Smith Mills to Charlottesburg, West Milford Twp., Passaic Co., and Kinnelon Boro, Morris Co. Bids Nov. 1, awarded Nov. 9. CD 11/7, under LB.

▲ Buckley & Co., Inc., 1317 S. Juniper St., Phila., Pa., LB $2,399,350, Market Street Subway exten., PHILA., PA. Dpt. City Transit, City Hall Annex, Phila., Pa. Bids Nov. 7.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2.

F. P. Asher Jr. & Son, West Extension Annapolis, Md. LB stone $364,418, stone and grav. $362,518, slag and grav. $362,261.

BUILDINGS

LOW BIDS AND CONTRACTS

Isidore Wishneff, c/o Stanley H. Klein, archt., 89-31 161 St., Jamaica, N. Y. Owner builds. Approx. $700,000. 38 HOUSES, 35 Ave. and Corporal Kennedy St. between 209 and 210 Sts., BAYSIDE, N. Y.

Midland Gardens Homes, c/o Alwin Cassens, Jr., archt., 145 S. Franklin Ave., Valley Stream, N. Y. Owner builds. Approx. $500,000. 43 HOUSES, on 14 acre site west of Newbridge Ave. and north of Jerusalem Ave., EAST MEADOW, N. Y.

▲ Verbena Homes, c/o Alwin Cassens, Jr., archt., 145 S. Franklin Ave., Valley Stream, N. Y., Owner builds. Approx. $1,200,000. 110 HOUSES, on 31 acre tract, Hempstead Turnpike, FARMINGDALE, N. Y.

▲ New York City Housing Auth., 63 Park Row, New York 38, N. Y., rejected bids Oct. 9. Redtern HOUSES, Proj. No. NYS-55, Sect. II, incl. Bldgs. Nos. 6 to 23 (inclusive) in area bounded by Nassau County line, Jeanette, Dabney and Redtern Aves. and Hassock St., Queens Boro, FAR ROCKAWAY, N. Y. LB $1,144,000. CD 10/17, under LB.

Kamen Homes, c/o A. H. Salkowitz, archt., 37-60 82 St. Jackson Heights, N. Y. Owner builds. Approx. $500,000. 30 HOUSES, 146 St. and 35 Ave., FLUSHING, N. Y.

John W. Harris Assoc., Inc., 30 Rockefeller Plaza, New York 20, N. Y. CA. Approx. $800,000. three 6-story APARTMENTS for 104 families, Maple Ave., HASTINGS-ON-HUDSON, N. Y. Communities Redevelopment Corp., 52 Vanderbilt Ave., New York 17, N. Y., Holsman, Holsman, Klekamp & Taylor, 39 S. State St., Chicago, Ill., and Raymond & Rado, 101 Park Ave., New York 17, N. Y., archts.

▲ Knickerbocker Homes, c/o Oscar Silverstone, archt., 153 Pierrepont St., Brooklyn 2, N. Y. Owner builds. Approx. $3,000,000. 300 HOUSES, on tract at South Oyster Bay and Woodbury Rds., HICKSVILLE, N. Y.

▲ Knolls Co-operative, Inc., 118 28 St., New York 16, N. Y. Owner builds. Approx. $1,500,000. two 10 story APARTMENTS, Henry Hudson Parkway and Kappock St., NEW YORK, N. Y. CD 11/9.

▲ Leon D. DeMatteis Constr. Co., 827 Elmont Rd., Elmont, N. Y. CA, $1,694,102, HIGH SCHOOL, LEVITTOWN, N. Y. Bd. Educ., Union Free School Dist. 5, Lyle C. Smith, pres., Helen M. Lipp, clk., Division Ave. School, Levittown, N. Y. Bids Oct. 8. CD 10/3.

▲ Rothrock Syosset Homes, c/o Matern & York, archts., 90-04 161 St., Jamaica, N. Y. Owner Builds. Approx. $2,000,000. 200 HOUSES, on 50 acre tract, SYOSSET, N. Y.

▲ Gedney Manor Homes, c/o Samuel Paul, archt., 163-18 Jamaica Ave., Jamaica, N. Y., Owner builds. Approx. $1,400,000. 70 HOUSES, 30 acre tract at Hartsdale and Mamaroneck Rds., WHITE PLAINS, N. Y.

20th Century Homes, Inc., 27 and Marlton Pike, Camden, N. J., Owner Builds, $300,000, RESIDENTIAL DEVELOPMENT, BURLINGTON, N. J. Dante J. D'Anastasio, 1815 Federal St., Camden, N. J., archts.

Henry M. Taggart, Inc., 1924 Chestnut St., Phila., Pa., CA, $570,700, COURT HOUSE and CITY HALL addns., alterations, CAMDEN, N. J. Bd. Freeholders Camden Co., City Hall, Camden, N. J. Bids Sept. 11. CD 9/19, under LB.

Owner, c/o C & M Home Builders, Inc., 2534 W. Thompson St., Phila., Pa., Separate Contracts, $500,000, RESIDENTIAL DEVELOPMENT, Greenwood Ave., etc., CAMDEN, N. J.

▲ Wood Estates Homes, c/o Erwin Gerber, archt., 1180 Raymond Blvd., Newark, N. J., Owner Builds, $3,000,000. 200 HOUSES at 141 acre tract at North Livingston Ave. LIVINGSTON, N. J. (Correction—location.) CD 11/15, under N. Y., Livingston.

Maywood Lawns Homes c/o Leonard G. Feinen, archt., 320 Lincoln Ave., Approuck Heights, N. J., Owner Builds. $800,000, 52 HOUSES on 15 acre tract at Spring Valley Ave. and Conklin Ave., MAYWOOD, N. J.

▲ Oakland Heights Homes, c/o Maniscalco & Hecker, archts., 332 River St., Hackensack, N. J., Owner Builds, $2,000,000, 200 HOUSES at tract on Franklin Ave. and Route 202, OAKLAND, N. J.

R. J. Daniels, 29 Hillman St., Clifton, N. J., Separate Contracts, $450,000, RESIDENTIAL DEVELOPMENT, Manetta Dr., POINT PLEASANT, N. J. Leonard G. Feinen, 333 Hill Crest Ave., Woodbridge, N. J., archt.

Wortmann & Sons, 109 E. 29 St., New York, N. Y., CA, $400,000, plant Bldg. 1 addn., PRINCETON, N. J. Heyden Chemical Corp., 393 7 Ave., New York, N. Y. Bids Oct. 23. CD 10/22.

Nathan Alterman, 2210 N. Natrona St., Phila. Pa., Separate Contracts, Approx. $500,000, RESIDENTIAL DEVELOPMENT, BRISTOL, PA.

▲ Heyl & Patterson, Inc., 55 Water St., Pittsburgh, Pa., and Fayette Constr. Co., Uniontown, Pa., CA, Approx. $2,200,000, 200,000 tons capacity COKE OVENS, Lucerne Mines, INDIANA, PA. Lucerne Coke Co., Indiana, Pa., Work underway. CD 8/24.

▲ Garland Constr. Co., 673 York Rd., Phila. Pa., Separate Contracts, $1,300,000, RESIDENTIAL DEVELOPMENT, Colonial and 64 Aves., PHILA. PA.

▲ Ware & Co., 1920 Sansom St., Phila. Pa., CA, $6,000,000, HOSPITAL, Overbrook Sect., PHILA., PA. Lakenau Hospital, Corinthian and Girard Aves., Phila. Pa. Bids Oct. 16. CD 10/17.

Roumfort Constr. Co., 8501 Williams Ave., Phila. Pa., Separate Contracts, Approx. $600,000, RESIDENTIAL DEVELOPMENT, Michener St., PHILA., PA. Leonard H. Caplan, 100 W. Rockland St., Phila., Pa. archt.

Henry Berman, 6032 Market St., Phila. Pa., Separate Contracts $600,000 RESIDENTIAL DEVELOPMENT, Bennington St., etc. PHILA. PA.

Ferraro Constr. Co., 509 N. Homewood Ave. Pittsburgh, Pa., LB $402,000. Federal HOUSING, 3 bldgs., (60 families) Proj. 67, RANKIN, PA. Allegheny Co. Housing Auth., County Office Bldg., Pittsburgh, Pa. Bowers & Barbalat, 534 Bakewell Bldg., Pittsburgh, Pa., archts. CD 9/12/50.

† **Wm. T. Lyons Co., Inc.**, Tower Bldg., Baltimore 2, Md. CA $647,401. 2 story, bsmt., 43x92 ft., concrete LOW TEMPERATURE TEST CHAMBER, MN 52-3 (2), EDGEWOOD, MD. U. S. Eng., 24 St. and Maryland Ave., Baltimore 18, Md. CD 9/27 under LB.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
November 28, Louisiana

BIDS ASKED—BUILDINGS

La., New Orleans—SCHOOL—B.A. 11/29—Orleans Parish School Bd., 703 Carondelet St. Union Park School, bounded by Humanity St., East St. Roch, Fairmont Dr. and West St. Roch Ave. Plans deposit $20, Extended date. Herbert A. Benson & Assoc., 302 Queen and Crescent Bldg., archts. CD 11/14.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Thorington Constr. Co., 2106 N. Hamilton Ave., Richmond, Va. LB $179,670, filter bldg. and dam;

Abbott & Ritchie, 318 W. Cary St., Richmond, Va., LB $204,270, mechanical equip. at filter plant at Falling Creek, CHESTERFIELD, VA. Chesterfield Co., Chesterfield, Va. Bids Nov. 12. CD 1/26.

▲ **WEST VIRGINIA**—State Rd. Comm., Charleston.

Keeley Constr. Co., Clarksburg, W. Va., CA $491,981, grading, draining, base 3.05 mi. Glatte-Hiawatha Rd., F-308 (4), Mercer Co.; CD $176,180, traffic bound 3.31 mi. Laurel Point Road S-608 (1), Monongalia Co.;

Anderson's Inc., 8 Spring St., W., Charleston, W. Va., CA, $226,496, b. conc. 12.6 mi. Smithville-Gilmer Co. Line Rd., S 250 (6), Ritchie Co.; CA, $301,132, b. conc. 0.59 mi. Spencer-Walton Rd., F-148 (2) Roane Co. Grand total $1,195,789. Bids Oct. 30, awarded Nov. 6. CD 10/19.

BUILDINGS

LOW BIDS AND CONTRACTS

Mottley Constr. Co., Farmville, Va., LB, $399,777, construct Deer Park Elementary SCHOOL, DENBIGH, VA. Warwick Co., Denbigh, Va. Bids Nov. 7. CD 10/25.

Baker & Coombs, Demain St., Morgantown, W. Va., LB, $959,700, 5 story bsmnt., 125x150 ft., brick, block MUSIC BLDG., MORGANTOWN, W. VA. West Virginia University, Morgantown, W. Va. Bids Oct. 25. CD 10/3.

Skinner & Ruddock, King St. exten., Charleston, S. C., LB $948,500 Tuberculosis SANATORIUM, CHARLESTON, S. C. Charleston County Council, The Center, Charleston, S. C. Bids Nov. 8. CD 10/15.

▲ † **U. S. Eng.**, Marietta, Ga. Owner Builds, $3,000,000, quonset type WAREHOUSES at rear of Lockheed Aircraft Corp. Plant, MARIETTA, GA.

Southeastern Builders, Inc., 1750 S. W. 3 Ave., Miami, Fla., CA $635,000, 90 HOMES, MIAMI, FLA. Stuart Webster, Inc., c/o contractor.

J. F. Holley, 905 6 Ave. N., Birmingham, Ala., LB $729,945, CHURCH, BIRMINGHAM, ALA. Hunter St. Baptist Church, c/o Geo. P. Turner, archt., American Life Bldg., Birmingham, Ala. Bids Nov. 7. CD 10/16.

I. W. Havard, Canton, Miss., LB Est. $600,000, FACTORY, for Great Southern Box Co., LUCEDALE, MISS. Bd. Supvrs. George Co., Lucedale, Miss. Bids Nov. 6. CD 10/18.

Grayson Jones Constr. Co., 901 E. Third St., Lexington, Ky. LB $485,000. HOSPITAL addn., LEXINGTON, KY. Good Samaritan Hospital, 210 S. Limestone St., Lexington, Ky. Bids Nov. 2. CD 10/29.

Derby Constr. Co., Poplar Level Rd., Louisville, Ky. LB $592,000. General contract Colored SCHOOL, Bohne Ave., LOUISVILLE, KY. Bd. Educ., Fifth and Hill Sts., Louisville, Ky. Bids Nov. 8. CD 10/22.

Al J. Schneider Constr. Co., 3720 Seventh St. Rd., Louisville, 10, Ky. CA $613,943, general constr. 4 story, rein.-con. natural SCIENCE BUILDING, LOUISVILLE, KY. University of Louisville, 2301 S. 3 St., Louisville, Ky. CD 10/19 under LB.

Bd. Educ., Fifth and Hill Sts., Louisville, Ky., rejected bids Nov. 8, colored elementary school, Bohne Ave., between 35 and 37 Sts., LOUISVILLE, KY. LB, $592,000. CD 11/12, under LB.

Taystee Baking Co., 1553 Madison Ave., Memphis, Tenn., Owner builds. Approx. $500,000. BAKERY addn., MEMPHIS, TENN. Regan & Weller, Commercial Title Bldg., Memphis, Tenn. archt.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

† OKLAHOMA—B.A. 12/4—U. S. Eng., Box 61, Tulsa. Cherokee and Sequoya Counties—relocation of Cherokee and Sequoyan County roads due to Tenkiller Ferry Reservoir. $345,000.

BIDS ASKED—BUILDINGS

Ill., Gurnee—SCHOOL—B.A. 11/27—School Dist. 50, Gurnee, school in Warren Twp., near here. $400,000. Wright, Alderman & Martin, 134 N. La Salle St., Chicago, Zone 2, archts. CD 5/9.

▲ **O., Dayton**—HIGH SCHOOL—B.A. About 12/7—Bd. Educ., 232 N. Main St., 3 story, bsmt., Parker vocational high school, 3,570 sq. ft. center court, etc. $2,000,000. Rial T. Parrish, U B Bldg., and W. Ray Yount, 3rd Natl. Bldg., archts. CD 1/4/51.

Ill., Addison—FACTORY—Bids Asked—Anchor Products Co., 805 S. Jefferson St., Chicago, Zone 7. 9,000 sq. ft. factory and office, $80,000. S. Epstein & Sons Co., 2011 Pershing Rd., Chicago, Zone 9, archt.

Ind., East Chicago—HOMES—Bids Asked—Indiana Harbor Homes Co., Div. of Inland Steel Co., East Chicago, Ind., 50 two family, 100 unit homes, $900,000. Samuel R. Lewis Co., 431 S. Dearborn St., Chicago 5, Ill., engrs. Ralph Stoetzel, 111 W. Monroe St., Chicago 3, Ill., archt. CD 7/18.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Jones & Krueger, 1021 S. Grand St., Springfield, Ill., est. $300,000, sewer lines and water lines.

A. F. Krall, 102 E. Prairie St., Decatur, Ill., sewage treatment and pumping plant, at St. Johns Sanitorium and St. James Trade School, SPRINGFIELD, ILL. Hospital Sisters of 3rd Order of St. Francis, Box 42, Springfield, Ill. Bids Oct. 26, awarded Nov. 5. CD 10/5.

† **Ellis Constr. Co.**, 16803 Greenfield St., Detroit, Mich. LB $560,000, school for SELFRIDGE AIR FORCE BASE, MICH. U. S. Eng., U. S. Custom House, 100 W. Larned St., Detroit, Mich. Bids Oct. 30. CD 10/23.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Knowlton Constr. Co.**, 106 N. Main St., Bellefontaine, O., CA. $1,854,450, HIGH SCHOOL, MARION, O. Bd. Educ., Marion, O. Awarded Nov. 9. CD 5/15.

▲ **A. Bentley & Sons Co.**, 201 Belmont St., Toledo, O., CA. $3,700,000, total est. cost $14,183,000, incl. equip. Plate Glass FACTORY, ROSSFORD, O. Libbey-Owens-Ford Glass Co., Nicholas Bldg., Toledo, O. Roy Nyquist, c/o owner engr. CD 5/15/51.

Joseph Bucheit & Sons Co., 819 Mahoning Ave., Youngstown, O., CA. Approx. $600,000, 70,000 sq. ft. addn. at south end of PLANT, YOUNGSTOWN, O. General Fireproofing Co., Dennick Ave. E., Youngstown, O. CD 10/8.

Superior Constr. Co., 1800 E. 7 Ave., Ind., CA $650,000, 1 and 2 story, 136x270 ft., 82x50 ft. and 1x481 ft., brick, concrete, steel FACTORY addn., VALPARAISO, IND. McGill Mfg. Corp., Lafayette and Bush Sts., Valparaiso, Ind. Bids Oct. 4, awarded Oct. 29. CD 10/10, under LB.

J. Emil Anderson Co., 1809 Balmoral St., Chicago, 40, Ill., CA. $400,000, 38,000 sq. ft. FACTORY at Algonquin Rd., DES PLAINES, ILL. Illinois Tool Works, 2501 N. Keeler St., Chicago, Ill. Arthur M. Heda, 1809 Balmoral St., Chicago, 40, Ill., archt. Awarded Nov. 5.

† **Poirot Constr. Co.**, 2001 Pershing Rd., Chicago 9, Ill. CA $873,000. 680,000 cu. ft. LAUNDRY BLDG. at Hines Hospital, HINES, ILL. Veterans Admin., Munitons Bldg., Wash., D. C. Awarded Oct. 30. CD 10/17, under LB.

Power Constr. Co., 212 S. Marion St., Oak Park, Ill., LB, $700,000, Goodman School, 1200 Goodman St., and Forest Road School in La Grange Park at Jackson and Forest Rds., LA GRANGE, ILL., School Dist. 102, 115 W. Cossitt St., La Grange, Ill. Bids Oct. 30. CD 10/10.

Paul G. O'Neal, 555 E. 13 St., Lockport, Ill., CA, $475,000. 2 Story, bsmnt. Lockport Township High SCHOOL, LOCKPORT, ILL. School Dist. 205, Lockport, Ill. Bids Aug. 22, awarded Nov. 1. CD 9/19, under LB.

▲ **Archiel Vanderebroeck & Arthur Van Hamme**, 1961 Fleetwood St., Grosse Pointe, Mich. Owner Builds. Approx. $1,500,000. 108 brick HOUSES, Severn and Broadstone Sts., HARPER WOODS, MICH.

La Salle Constr. Co., 327 S. La Salle St., Chicago, 4, Ill. CA, $500,000, Rolling MILL ADDN., RIVERDALE, ILL. Acme Steel Co., Pennsylvania R. R. and Calumet River, Riverdale, Ill. Awarded Nov. 1.

Eau Claire Co. Eau Claire, Wis., rescinded contract general constr. COURT HOUSE and JAIL, EAU CLAIRE, WIS. CA $487,617. CD 10/3, under CA.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
November 27, Iowa
STREETS AND ROADS
November 27, Iowa

▲ **Mont., Miles City**—B.A. 12/10—City, water sys. improvs., $1,390,000. Burns & McDonnell Eng. Co., 95 and Troost Sts., Kansas City, Mo., engr. CD 12/4/50.

BIDS ASKED—BUILDINGS

Minn., Detroit Lakes—SCHOOL—B.A. 11/27—Bd. Educ., H. F. Carlson, clk., 1 story school, $500,000. Plans deposit $25, Haxby, Bissell & Belair, 1211 Nicolet Ave., Minneapolis, archts. CD 6/28.

Kan., El Dorado—SCHOOL—B.A. 11/29—Bd. Educ., W. G. Kelly Elementary School, $300,000, Leaper & Gilbert Architects, 511½ N. Hillside St., Wichita, archts. CD 6/7.

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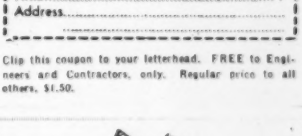

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Tex., DeKalb SCHOOL—B.A. 11/29—DeKalb Independent School Dist., DeKalb, brick exterior school, concrete pier and beam fdns., $300,000. Wyatt C. Hedrick, 904 Fort Worth Ave., Dallas, engr. CD 8/29.

Tex., Waddell — REFINERY. Bids Asked — Gulf Oil Corp., Gulf Bldg., Houston, 20-ton per day sulphur recovery refinery unit, $750,000. CD 10/30.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Missouri Valley Limestone Co., 490 B T Bldg., Des Moines, Ia., CA, $264,984, road surfacing, COUNCIL BLUFFS, IA. Pottawattamie Co., Council Bluffs, Ia. Bids Nov. 5. CD 10/31.

L. O. Brayton Co., Dyersburg, Tenn. CA $206,235. 340.6 mi. rural distr. lines, Bates, Benton, Cass, Johnson, Henry, St. Clair and Vernon Counties, MISSOURI. Osage Valley Electric Co-operative, Butler, Mo. Bids Oct. 25. CD 10/31.

Commonwealth Amusement Corp., 215 W. 18 St., Kansas City, Mo. Owner Builds. $100,000. drive-in-theater, incl. lighting, drainage and water facilities, near CLINTON, MO.

Victory Constr. Co., 2240 Brentwood Blvd., Brentwood, St. Louis 17, Mo. and **Paul Krummel**, 7201 Weil Ave., Shrewsbury, St. Louis 19, Mo. CA $667,537. 3,700 lin. ft. outfall sewer in Carroll St. from near 9 St., to Mississippi River, ST. LOUIS, MO. State Hy. Comn., Jefferson City, Mo. Awarded Nov. 9. CD 11/7, under LB.

† **Johnson Machine Works**, Chariton, Ia., CA, $113,416, intake structures bulkhead gates for Garrison Dam and Reservoir, Inv. 52-19, NORTH DAKOTA. U. S. Eng., Fort Lincoln, P. O. Box 300, Bismarck, N. D. Bids Oct. 23. CD 10/4.

Walco Eng. Co., P. O. Box 3037, Tulsa 1, Okla., CA, $400,000. 15 mi. new gas line and 700 h.p. compressor station, McALESTER, OKLA. Consolidated Gas Co., McAlester, Okla. Howard Holcombe, McAlester, Okla., engr.

Gulf Pipe Line Co., Port Arthur, Tex., CA. Approx. $580,000. 76 mi. 9 in. gas pipe line for transporting gas to chemical plants on coast, at Port Arthur, TEXAS. Gulf Oil Corp., Port Arthur, Tex. CD 2/15.

▲ **River Construction Co.**, Flatiron Bldg., Fort Worth, Tex., CA, $1,685,000. 93 mi. natural gas pipe line from near Houston to near Orange, at DuPont Sabine River works, near Houston, Harris Co., TEXAS. United Gas Pipe Line Co., c/o United Gas Bldg., Houston, Tex. CD 11/9.

Laneville Telephone Co-operative, Laneville, Tex. Force Account. $100,000. telephone pole line extens., Rusk Co., TEXAS. CD 10/19.

Poka-Lambro Telephone Co-operative, Tahoka, Tex. Force Account. $100,000. telephone unit pole line extens., Lynn Co., TEXAS. CD 10/22.

South Plains Rural Telephone Assn., Lubbock, Tex. Purchase and Hire. $135,000. addnl. units of rural pole telephone line exten., Lubbock Co., TEXAS. CD 1/8/47.

Tex-Harvey Pipe Line Co., Midland, Tex., CA. Approx. $188,000. 43 mi. crude oil gathering lines in Rankin Area, Reagan Co., TEXAS. Tex-Harvey Pipe Line Co., Tex-Harvey Oil Co. and Ashland Oil Purchasing Co., Midland, Tex. CD 5/29.

Titus Co., Court House, Mount Pleasant, Tex., Force Account. Approx. $125,000. 50 mi. road repairing, improv., grading, MOUNT PLEASANT, TEX.

Wm. A. Smith Contr. Co., 31 Gregg St., Houston, Tex., CA. Approx. $150,000. reconditioning 7 mi. railway line between Rockdale and Sandow, ROCKDALE, TEX. Aluminum Co. of America, 801 Gulf Bldg., Pittsburgh, Pa.

† **WYOMING**—Bureau P. Rds., Dpt. Commerce, Bldg. 22, Denver Federal Center, Denver, Colo.

Strong Co., Springville, Utah, LB $421,110. 6.761 mi. Forest Highway Proj. 2-M, Wind River, Teton Co. Bids Oct. 31.

BUILDINGS

LOW BIDS AND CONTRACTS

Larsen Bros., 10 N. Main St., Council Bluffs, Ia. LB $671,704. general contract HOSPITAL addn., COUNCIL BLUFFS, IA. St. Bernard's Hospital, 521 Harmony St., Council Bluffs, Ia. Bids Nov. 6. CD 10/25.

Geo. Bennett Constr. Co., 1520 Central Ave., Kansas City, Kan. LB $532,033. Bryant and Benton SCHOOLS, INDEPENDENCE, MO. School Bd., L. G. Keith, Supt., Independence, Mo. CD 5/8/51.

▲ **G. L. Tarlton Contg. Co.**, 5505 Dale Ave., St. Louis 10, Mo. CA $3,500,000. 200x500 ft.; concrete, steel test flight hangar west of present main bldg. of AIRCRAFT PLANT, inc. ferry pilot's lounge, operations office, engineering offices and parking lot, Robertson, ST. LOUIS CO., McDonnell Aircraft Corp., Lambert-St. Louis Municipal Airport, Robertson, Mo. Sverdrup & Parcel, Inc., Syndicate Trust Bldg., 917 Olive St., St. Louis 1, Mo., engr. CD 8/29/50.

James Stewart & Co. Inc., Magnolia Bldg., Dallas, Tex. CA. Approx. $685,000. 125,000 sq. ft., PLANT and WAREHOUSING, in Trinity Industrial area, DALLAS, TEX. Trammel Crow, 425 S. Field St., Dallas, Tex., (Goodrich Rubber Co. lessee). CD 9/20.

Inwood Constr. Co., 5151 Northwest Hy., Dallas, Tex., LB $453,873. HOSPITAL imprvs. and construct new 6 story HOSPITAL UNIT, masonry type, air-conditioning, DALLAS, TEX. Methodist Hospital, Colorado and Ballard Sts., Dallas, Tex. Bids Oct. 25. CD 10/9.

Thomas Brennon & Co., 801 Commerce St., Fort Worth, Tex., CA. Approx. $350,000. Proj. 3, 45 DWELLINGS, FORT WORTH, TEX. Thomas M. Ryan & Co., 801 Commerce St., Fort Worth, Tex. CD 4/17/51.

Bonnie View Building Corp., Garland, Tex., Owner Builds. $325,000. Sect. 3, 40 DWELLINGS, GARLAND, TEX. CD 10/10.

Bert Coates, 2402 Darrington St., Houston, Tex., Owner Builds. Approx. $355,000. 15 DWELLINGS, HOUSTON, TEX. CD 4/13.

Casey Cosgrove, 107 Hunt St., Houston, Tex., Owner Builds. $390,000. 8 DWELLINGS, HOUSTON, TEX. CD 11/8.

O. E. St. Clair, Irving, Tex., Own Forces. $374,000. 22 masonry, frame DWELLINGS, concrete slab fdns., IRVING, TEX., CD 10/8.

Urban Development Corp., c/o Forrest Lumber Co., 1400 Fourth St., Lubbock, Tex. Owner Builds. Approx. $425,000. 50 DWELLINGS, LUBBOCK, TEX. CD 4/11.

Carl M. Brown, 1350 Buckner St., Dallas, Tex. Owner Builds. $335,000. 75 low-cost HOUSING units, MESQUITE, TEX. CD 6/30/50.

C. O. Beeler Riverside Development Co., 5047 Henrietta St., Houston, Tex. Owner Builds. $370,000. Proj. 3, 10 DWELLINGS, PASADENA, TEX. CD 2/23.

Jess H. Vickers, 1507 Delano St., Houston, Tex. Purchase and Hire. $335,000. Unit 2, 35 DWELLINGS, PASADENA, TEX. CD 4/19.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
December 5, California

BIDS ASKED—BUILDINGS

▲ **Wash., Seattle**—ENGINEERING—B.A. 12/4—Boeing Airplane Co., 7755 E. Marginal Way, 5 story, 200x300 ft., engineering bldg., addn. $2,500,000. J. W. Maloney, Central Bldg., archt. CD 11/5.

▲ **Calif., Port Chicago**—HOUSING—B.A. 12/12—Dist. Pub. Wks. Officer, Twelfth Naval Dist., Federal Office Bldg., San Francisco, construct, manage and finance 120-family dwelling units, at Naval Magazine, Plans deposit $20. CD 7/18.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

M. Malaspina, 1901 23 Ave. S., Seattle, Wash., LB $424,051, est. $360,000. 17,370 ft. 8- to 30-in. sewers, Unit 3 of West Trunk Sewer, SEATTLE, WASH. Lake City Sewer Dist., 3622 E. 105 St., Seattle, Wash. Bids Nov. 8. CD 10/31.

† **L. H. Hoffman**, 715 S. W. Columbia Blvd., Portland, Ore., LB, $810,000, est. $915,945 outside utilities, waste disposal facilities, paving, etc. for Hanford Works Laboratory, RICHLAND, WASH. General Electric Co., Richland, prime contractor to Atomic Energy Comn. for operation Hanford Works, Richland, Wash. Bids Nov. 7. CD 10/11.

† **Guy F. Atkinson Co. and Willamette Iron & Steel Co.**, 2860 N. W. Front St., Portland, Ore., LB, $517,959, tainter gates, hoists, Detroit Dam, Civeng 35-026-52-37, OREGON. U. S. Eng., Pittock Block, Portland, Ore. Bids Oct. 24.

† **Haddock Engineers Ltd.**, Box 390, Montebello, Calif., CA, $765,000, constr. Pundsburg Wash. Test Range Fourth Increment, INYOKERN, CALIF. Naval Ordnance Test Station, Inyokern, Calif. Bids Oct. 23. CD 10/31, under LB.

R. A. Bell, 901 S. Primrose St., Monrovia, Calif., CA, $747,750, diversion tunnel and power tunnel stubs, Cherry River Proj., in Stanislaus National Forest, SAN FRANCISCO, CALIF. Public Utilities Comn. City Hall, San Francisco, Calif. Bids Oct. 23, awarded Nov. 6. CD 11/7, under LB.

▲ **St. Mary's Square Garage Corp.**, 27 Sutter St., San Francisco, Calif., LB, construct and operate underground garage St. Mary's Square, SAN FRANCISCO, CALIF. Parking Authority, 500 Golden Gate Ave., San Francisco, Calif. Bids Nov. 9. CD 9/13.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Zoss Constr. Co.**, 401 N. Avenue 19, Los Angeles Calif., LB $3,827,782, five 200x800 ft. masonry, steel WAREHOUSES, at Auburn General Depot ENG 45-108-52-52, AUBURN, WASH. U. S. Eng., 4735 E. Marginal Way, Seattle, 4, Wash. Bids Nov. 8. CD 10/9.

Tucker & Co., 2012 43 Ave. N., Seattle, Wash., CA $486,310, Clyde Hill Elementary SCHOOL, BELLEVUE, WASH. School Dist. 405, Bellevue, Wash. Bids Nov. 8. CD 10/23.

▲† **L. H. Hoffman**, 715 S. W. Columbia St., Portland, Ore., CA, $2,840,000, Pile TECHNOLOGY and RADIO-METALLURGY LABS. at Hanford Works, RICHLAND, WASH. General Electric Co., Richland, prime contractor to Atomic Energy Comn. for operation of Hanford Works, Richland Wash. Bids Oct. 10. CD 10/16, under LB.

W. G. Meyers, Hyde Bldg., Spokane, Wash., LB, $647,247, 200x500 ft., 1 story FACTORY addn., SPOKANE, WASH. Columbia Electric & Mfg. Co., W1024 Ide St., Spokane, Wash. Bids 11/7. CD 11/5.

Midstate Constr. Co., Bank of America Bldg., Fresno Calif., LB, $587,773, SCHOOL Shields and Sweden Aves., FRESNO, CALIF. Scandinavian Elementary School Dist., 3068 Grant Ave., Fresno, Calif. Bids Nov. 7. CD 10/30.

▲ **Oppenheim & King**, P.O. Box 1902, Fresno, Calif., LB, $1,156,216, 58 DWELLINGS under Cal 6-7 and 118 units under Cal 6-10, Housing, FRESNO, CALIF. Public Housing Auth. 2511 Vassar Terrace, Fresno, Calif. Bids Nov. 8. CD 10/17.

▲ **Sierra Homes, Inc.**, Box 1987, Reno, Nev., CA, $1,245,755, construct, manage and finance 125 HOUSING

units at Sierra Ordnance Depot, HERLONG, CALIF. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids July 16, awarded Nov. 7. CD 7/24, under LB.

▲ **Bechtel Corp.**, 220 Bush St., San Francisco, Calif., CA. $1,500,000, expanding alkane PLANT facilities, RICHMOND, CALIF., Standard Oil Co. of California, 225 Bush St., San Francisco, Calif. CD 8/14.

ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

† **Alaska, Fort Richardson**—DUCT WORKS and CABLE INSTALLATIONS—B.A. 12/4—U. S. Eng., APO 942, c/o PM, Seattle, Wash.) Anchorage, 20,000 ft. underground duct works and cable installations and 3,400 ft. aerial cable for telephone installations, Inv. 595-507-52-13. Plans deposit $25. CD 11/5.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

Alta., Suffield—TEST SHED—B.A. 11/27—D. W. Laird, engr., Defence Constr., Ltd., 400 Kensington Bldg., Winnipeg, Man., design and construct hangar type test shed. Approx. $500,000. Plans deposit $50.

Ontario—TELEVISION RELAY STATIONS, etc.—Bids Asked—Bell Telephone Co. of Canada, 7o Adelaide St. W., Toronto; twelve 1 story 24x30 ft., concrete block, concrete television relay stations and towers from Buffalo, N. Y. to Toronto, Ont., Toronto, Ont. to Montreal, Que. Over $500,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Assinboia Eng. Co. Ltd., 1501 9 Ave., Calgary, Alta., CA, $549,331, repairing runways at aerodrome CALGARY, ALTA. Govt. of Canada, Dpt. Defence Production, 70 Lyon St., Ottawa, Ont. CD 6/21/48.

Sterling Constr. Co., Ltd., 2494 Sandwich St. E., Windsor, Ont., CA, $90,000, 7 story, 17x21 ft. concrete fdn., steel frame, asbestos sidewalk airport control tower; CA, $500,000, 1 story, 60x104 ft., steel frame, asbestos board walls heating plant, concrete fdn. for air force station at NORTH BAY, ONT. Defence Constr. Ltd., 441 Queen's Quay W., Toronto, Ont. R. P. Ople, c/o owner, regional engr. Awarded 11/1. CD 6/8.

BUILDINGS

LOW BIDS AND CONTRACTS

Bennett & White of Edmonton, Ltd., 11239 83 St., Edmonton, Alta., LB, $979,000, general contract rein.-con. maternity wing addn. Royal Alexandra HOSPITAL.

Carse Anderson Ltd., 10014 - 102 A Avenue, Edmonton, Alta., LB, $300,000, plumbing, heating and ventilating for same, EDMONTON, ALTA. City, Civic Block Edmonton, Alta. Bids Oct. 29. CD 10/9.

W. C. Wells Constr. Co. Ltd., 10511 115 St., Edmonton, Alta. CA. Approx. $700,000, COURT HOUSE addn., EDMONTON, ALTA. Dpt. P. Wks., Edmonton, Alta. N. C. McKernan, 6 Credit Foncier Bldg., Edmonton, Alta., archt.

Bennett & White Constr. Co. Ltd., 660 Howe St., Vancouver, B. C., CA, $709,735, rein.-con. frame, Gladstone Junior High SCHOOL addn., VANCOUVER, B. C. Vancouver School Bd., 1595 W. 10 Ave., Vancouver, B. C. Bids Oct. 19, awarded Nov. 9. CD 10/4.

Bird Constr. Co. Ltd., Sargent & Erin Aves., Winnipeg, Man., CA, Approx. $950,000, two BARRACK BLOCKS at Army Camp, CAMP SHILO, MAN. Defence Constr. Ltd., 400 Kensington Bldg., Winnipeg, Man. Bids Sept. 19.

W. B. Sullivan Constr. Ltd., 30 Bloor St. W., Toronto, Ont., CA, Approx. $500,000, 50-man BARRACK BLOCK at army camp, CAMP BORDEN, ONT. Defence Constr. (1951) Ltd., 441 Queen's Quay W., Toronto, Ont. Awarded Nov. 10. CD 10/27, under LB.

Bryers Constr. Co., 132 Brantdale St., Hamilton, Ont., CA, Approx. $750,000, 125 HOUSES, Highway Ave., LONDON, ONT. Central Mortgage & Housing Corp., 441 Queen's Quay W., Toronto, 2B, Ont. Bids Oct. 9. CD 9/28.

R. Timms Constr. & Eng. Co., 221 Burgar St., Welland, Ont. CA, $490,000, 4 story, 65x101 ft., steel rein.-con. COUNTY BLDG. addn., WELLAND, ONT. Welland Co., 102 Main St. E., Welland, Ont. Bids July 3, awarded Nov. 8. CD 6/13.

Emile St. Pierre, 14 St. Germain St., Rimouski, Que., CA, $610,300, 3 story, humt., 44x166 ft., 3 story, 50x97 ft., rein.-con. stone COURTHOUSE, RIMOUSKI, QUE. Province of Quebec, Dpt. Attorney General, Quebec City, Que. M. Mainguy, 565 St. John St., Quebec City, Que., archt.

Marwell Constr. Co. Ltd., 1500 Georgia Ave., W., Vancouver, B. C., CA, $350,000, 49 unit HOUSING development for military personnel base, WHITEHORSE, YUKON TERRITORY. Defence Constr. Ltd., 400 Kensington Bldg., Winnipeg, Man. Bids Oct. 2, awarded Nov. 5. CD 9/17.

FOREIGN

BIDS ASKED—HEAVY CONSTRUCTION

France, LeHavre—B.A. 12/28—Chamber of Commerce, Boite Postale, 1410, LeHavre, France, suspension bridge across the estuary, River Seine at Tancarville; adv. ENR 11/22.

OFFICIAL PROPOSALS

Bids: December 4, 1951

New York Roadway Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time, Tuesday, December 4, 1951 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1				
		G. L. Nickerson, Dist. Engr., 333 Broadway, Albany, N. Y.				
Albany	R.C.51-68	Br. No. 1, S. H. 5614-5639	.....	Painting 4 Bridges	$1,300	$24,000
Greene		Br. No. 1, S. H. 5716			Plans $10	
Rensselaer		Br. No. 1, S. H. 200-721				
Saratoga		Br. No. 1, S. H. 720				
Washington						
		DISTRICT No. 3				
		Wm. Robinson, Dist. Engr., 301 E. Water St., Syracuse, N. Y.				
Cortland	FARC51-81	Broome County Line-Marathon, 12.61 S. H. 5595 Marathon-Cortland, Pts. 1, 2, 3 & 4, S. H. 8021A, 8021B, 1500 Proj. FI 481-4		Asp. Conc. Ty. 1A, Opt. Widen Exist. 30' I-Beam	$33,000 Plans $25	$604,000
		DISTRICT No. 4				
		A. R. Mulligan, Dist. Engr., Barge Canal Terminal, Rochester, N. Y.				
Monroe	LOSP51-3	Lake Ontario State Parkway, Sec. "C"	3.07	Graved Found. Course = 3.06 Mi. Misc. Work = 0.01	$49,000 Plans $25	$891,000
		DISTRICT No. 7				
		R. F. Hall, Dist. Engr., 444 VanDuzee St., Watertown, N. Y.				
St. Lawrence	FAS851-22	Stockholm Center-Lawrenceville, Pt. 2, (Co. Rd.) Proj. No. S 263(2)	2.09	Bit. Mac. Ty. 1, (Pen. Method)	$8,000 Plans $10	$134,000
		DISTRICT No. 8				
		J. S. Bixby, Dist. Engr., Pleasant Valley Road, Poughkeepsie, N. Y.				
Dutchess	R.C.51-85	Various Highways in Dist. No. 8	.....	Removal of 172 Trees	$600 Plans $10	$11,000
Putnam						
Orange	R.C.51-84	West Point-Central Valley, S. H. 5328A Cornwall-West Point, Pts. 1 & 2, S. H. 5408	3.82	Cable Guide Railing, Opt.	$1,100 Plans $10	$21,000
		DISTRICT No. 9				
		F. W. Donovan, Dist. Engr., 71 Frederick St., Binghamton, N. Y.				
Delaware & Sullivan	R.C.51-83	East Branch-Sullivan County Line, I. 11 Pts. 1 & 2, S. H. 5383, 5340 Liberty County Line, Pt. 2, S. H. 5254		Stream Channel Clearing and Bank Protection	$1,500 Plans $10	$65,000
		DISTRICT No. 10				
		J. J. Darcy, Dist. Engr., Montauk Highway at Little E. Neck Road, Babylon, L. I., N. Y.				
Bronx & Westchester	FA BRP51-3	Bronx River Parkway (So. Ext.) (F. 233rd St.-City Line) (Access Proj. No. U 979-14)	0.63 0.61	8" Cem. Conc. Pavt. 2 at 34' Wide. = 0.55 Mi. Asp. Conc. Ty. 1A, Opt. = 0.04 Mi. Misc. Work = 0.04 Mi. Cem. Conc. Pavt. on Access Rd. = 0.61 Mi.)	$54,000 Plans $25	$917,000
Nassau	R.C.51-73	Hempstead-Farmingdale, Pt. 3, S. H. 9035	3.77	Traffic Control System	$4,000 Plans $10	$74,000
Nassau & Suffolk	FARC51-80	Nassau-Cold Spring Harbor, & Pt. 2, S. H. 545, 1652 Proj. No. F 381(4)	0.87	Asp. Conc. Ty. 1A, Opt. Widen Exist. 30' Conc. Arch	$7,000 Plans $10	$132,000

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
Supt. of Public Works

Bids: December 18, 1951

Public Grain Elevator

Sealed bids will be received by the Board of Commissioners of the Port of New Orleans at their office, Room 204, No. 2 Canal Street, until 2:00 P.M., December 18, 1951, and then publicly opened for construction of Public Grain Elevator, either under two separate contracts for Items A and B or under one contract for Item C.

ITEM A—Foundations, dumper pits, etc.

ITEM B—Structures and appurtenances complete with mechanical, electrical and all other installations.

ITEM C—Complete project.

A deposit of five per cent of the sum bid, by certified check only, certified by an accredited officer of an accredited bank, is required with each bid. A deposit for a bid on Item C will be applicable to separate bids on either or both of the other items, or the bidder may furnish the deposit called for with each separate bid submitted.

A surety bond, by an acceptable surety company, in the amount of 100% of the sum bid is required with notarial contract.

Specifications, plans and bid forms are on file in the Board's office mentioned above. Complete sets will be furnished to prospective bidders on deposit of $50.00 for each set of Item A and $150.00 for each set of Item B or Item C, which deposit(s) will be refunded to depositors who submit bids with plans. In case of depositor not submitting a bid, $25.00 of bidder's deposit for Item A or $100 of bidder's deposit for Item B or Item C, will be refunded upon return of full sets in good condition within thirty days after opening bids.

The right is reserved to accept or reject any or all bids and to waive informalities, and to award contract as the Board may determine to be for its best interests.

E. H. LOCKENBERG
General Manager

November 15, 22, 1951

OFFICIAL PROPOSALS

Bids: December 4, 1951

Soil Explorations and Foundation Investigations

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 A.M., eastern standard time, on December 4, 1951 by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON THE NEW YORK STATE THRUWAY, NIAGARA SECTION, SUBDIVISION N-6, PORTER AVENUE TO ONTARIO STREET, CITY OF BUFFALO, ERIE COUNTY, WHICH CONSTITUTES CONTRACT NO. SPEC. SM-22

Maps, plans and specifications may be examined and obtained at the Bureau of Contracts and Accounts on the 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., and also in the office of Charles R. Waters, District Engineer, 65 Court Street, Buffalo 2, New York. The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's estimate of cost for this work is $27,600.00.

Proposal for this contract must be submitted in a separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for $1380.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders."

The right is reserved to reject any or all bids.

B. D. TALLAMY
Superintendent of Public Works

Aswan Dam Hydro Electric Scheme

EGYPTIAN GOVERNMENT
MINISTRY OF PUBLIC WORKS
HYDRO-ELECTRIC POWER COMMISSION

ADJUDICATION FOR SLUICE GATES, WEED SCREENS, LIMPETS, DOWNSTREAM GATES AND CRANES FOR HANDLING GATES

The Egyptian Government hereby announces that Tenders are invited for the supply, erection and maintenance of the Sluice Gates, Weed Screens, Limpets, Downstream Gates and Cranes for handling gates required for the Hydro-Electric Power Station at the Aswan Dam, all according to the Specification.

The Tender Documents comprising Conditions of Contract, Specification and Tender Drawings for the entire works may be obtained as from December 1st, 1951 either at the Hydro-Electric Power Department, Ministry of Public Works, Cairo, or the office of the Consulting Engineers of the Egyptian Government, Kennedy & Donkin, 12 Caxton Street, London, S.W.1., or from Royal Egyptian Embassies and Legations in Washington, Paris, Stockholm, Berne, Brussels, Rome and Frankfurt.

Tenders must pay LE20 (equivalent to $57.50 in American dollars) which covers the cost of the complete set of Tender Documents and Drawings. This sum must be paid to the National Bank of Egypt either in Cairo or in London to the credit of Hydro-Electric Power Department, Ministry of Public Works, or at one of the above mentioned Embassies or Legations, and will not be refunded.

Upon presentation of the Bank receipt to either the Hydro-Electric Power Department in Cairo or the Consulting Engineers in London, or on the payment of the required sum at one of the above mentioned Embassies or Legations, as the case may be, tenders will be supplied with the complete set of Tender Documents above referred to.

Firms who have already purchased the Tender Documents dated August 1949 comprising the original Enquiry for Sluice Gates which was subsequently cancelled and who have not received a refund of the sums previously paid, will be able to exchange such original documents for the new specifications without further charge.

OFFICIAL PROPOSALS

When submitting their tenders, tenderers must pay a provisional deposit of two per cent of the value of the Contract with a maximum of LE.30,000 (Thirty thousand Egyptian Pounds) to the National Bank of Egypt in Cairo, or in London to the credit of Hydro-Electric Power Department, Ministry of Public Works. Letters of guarantee from approved Banks will be accepted in lieu of cash. A list of approved banks is given in the specification.

The Contractor to be entrusted with these works will, after consideration of tenders by the Hydro-Electric Power Commission and the Consulting Engineers, be nominated by the Egyptian Government and the work shall be executed as a sub-contract to the order of the main contractor for the Civil Engineering works.

Bids: November 27, 1951

Butterfly Type Valves

CONTRACT 429

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M., Eastern Standard Time, on Tuesday, November 27, 1951, for Contract 429, for furnishing, testing and delivering two 60-inch cast iron motor-operated butterfly type valves, complete in every respect, for installation in the Downsville release water chamber of the Delaware aqueduct, all as set forth in the specifications.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of the City of New York, in the amount of two thousand dollars ($2,000.00), for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, requirements as to surety, etc., can be obtained in Room 1311, at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, RUFUS E. McGAHEN, EDWARD C. MAGUIRE, Commissioners, Board of Water Supply; RICHARD H. BURKE, Secretary.

Bids: December 3, 1951

Rehabilation of New York Engineers Field Office

THE PORT OF NEW YORK AUTHORITY
LINCOLN TUNNEL
CONTRACT LT-160.034

Sealed proposals for the rehabilitation of the New York Engineers Field Office on 11th Ave. between West 38th and West 39th Streets, Manhattan, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111-8th Ave., New York 11, until 11:00 A.M. Monday, December 3, 1951.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $10 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

New York, November 23, 1951

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-3594) will be received by the Bureau of Reclamation, Denver, Colorado, until December 20, 1951, and then publicly opened for furnishing 2 governors with pumping equipment for regulating the speed of 26,500-hp., 163.6-rpm, vertical-shaft single-runner, Francis-type hydraulic turbines for Alcova Power Plant, Kendrick Project, Wyoming. Delivery is desired within 540 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver, Colorado.

OFFICIAL PROPOSALS

Bids: December 4, 1951

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

BRIDGES, ROUTE 56, SECTION 3A
Reconstruction of six bridges on Route 56, Section 3A, Absecon Boulevard between the City of Absecon and Atlantic City, in Atlantic County. The principal items of construction are:

Bridge Items

Estimated:
2,633 cu. yds. Concrete in Structures
509,425 lbs. Reinforcement Steel in Structures
26,770 lin. ft. Treated Timber Piles
154 M. B. M. Treated Timber
33,570 sq. ft. Treated Timber Sheet Piling
16,335 lbs. Galvanized W. I. Tie Rods

Roadway Items

5,836 cu. yds. Roadway Excavation
10,642 cu. yds. Borrow Excavation
1,643 sq. yds. Waterbound Macadam Base and Intermediate Courses
837 tons Bituminous Concrete Surface

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, December 4, 1951, at eleven o'clock (11:00 A.M. — EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Greer, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: R. J. Abbott
State Highway Commissioner

Bids: December 11, 1951

Runway A and Taxiway T-2

THE PORT OF NEW YORK AUTHORITY
NEWARK AIRPORT
GRADING, DRAINAGE AND PAVING
CONTRACT NA-220.002

Sealed proposals for the removal of surcharge fill and the furnishing and installation of drainage, paving and conduit systems for Runway A and Taxiway T-2 at Newark Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, until 11:00 A. M. Tuesday, December 11, 1951, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $25 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman.

New York, November 23, 1951

OFFICIAL PROPOSALS

Bids: December 4, 1951

Gravel Filter Well Units

Notice is hereby given that sealed bids will be received in the office of the Director, Division of Purchase and Property, Room 318, State House, Trenton 7, New Jersey, for the following:

Three (3) gravel well units for the new Fourth Mental Hospital at Ancora, Winslow Township, New Jersey.

Bids for the above will be received at the office of the Director, Division of Purchase and Property, State House, West State Street, Trenton 7, New Jersey.

On Tuesday, December 4, 1951 at two (2:00) o'clock and will be opened and read immediately thereafter.

Specifications and the form of bid, contract and bond for the proposed work are on file in the office of the Director and may be secured by prospective bidders during office hours. Bids must be made on the standard proposal form, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than 5% of the amount of the bid, and must be delivered at the above place on or before the hour named, as no bid will be accepted after the hour specified. Bids not submitted on the standard proposal form or enclosed in other than the special addressed envelopes will be considered informal and will be rejected. The Director reserves the right to reject any and all bids and to award contract in part or whole if deemed to the best interests of the State to do so. The successful bidder will be required to qualify for Surety Bond in the full amount of the contract, of a Company authorized to do business in the State of New Jersey.

DEPARTMENT OF THE TREASURY
DIVISION OF PURCHASE AND PROPERTY
Fred V. Ferber, Director

Bids: December 20, 1951

Intercepting and Outfall Sewers and Sewage Treatment Plant

Danville Municipal Authority, Borough of Danville
Montour County Pennsylvania

Sealed proposals will be received at the office of J. M. Robbins, Solicitor for the Danville Municipal Authority, at 104 Mill Street, Danville, Pennsylvania, until 1:30 P.M., E.S.T., Thursday, December 20, 1951, for furnishing all necessary labor, materials and equipment, and performing all work for the construction of INTERCEPTING AND OUTFALL SEWERS AND SEWAGE TREATMENT PLANT. Bids will be publicly opened and read at 2:00 P.M., E.S.T., Thursday, December 20, 1951, in the Council Chambers of the Borough of Danville, Borough Hall Building, Mill Street, Danville, Pennsylvania. Separate proposals will be received upon five (5) parts of the project as follows:

Contract One—CONSTRUCTION OF INTERCEPTING AND OUTFALL SEWERS.
Contract Two—GENERAL CONSTRUCTION OF A SEWAGE TREATMENT PLANT.
Contract Three—PLUMBING WORK IN CONNECTION WITH CONSTRUCTION OF SEWAGE TREATMENT PLANT.
Contract Four—HEATING WORK IN CONNECTION WITH CONSTRUCTION OF SEWAGE TREATMENT PLANT.
Contract Five—ELECTRICAL WORK IN CONNECTION WITH CONSTRUCTION OF SEWAGE TREATMENT PLANT.

OFFICIAL PROPOSALS

Each proposal shall be accompanied by a certified check in amount not less than five (5) per cent of the bid total, or a bid bond in amount not less than seven and one-half (7½) per cent of the bid total, all in accordance with provisions contained in the Specifications.

Copies of the Contract Documents, including Plans and Specifications will be available for inspection at the office of Gannett Fleming Corddry & Carpenter, Inc., 600 North Second Street, Harrisburg, Pennsylvania, and at the office of J. M. Robbins, 104 Mill Street, Danville, Pennsylvania; or they may be obtained from the first of the above stated places upon deposit of the following amounts for each set:

Contract One—SEWERS —$10.00
Contract Two—
GENERAL CONSTRUCTION—$20.00
Contract Three—
PLUMBING WORK —$10.00
Contract Four—
HEATING WORK —$10.00
Contract Five—
ELECTRICAL WORK —$10.00

Full refund will be made to actual bidders for return of one of each set in good condition within ten (10) days after closing date for receipt of bids; refund for return of all other sets, in good condition within the same period, will be fifty (50) per cent of the deposit.

N.P.A. controlled materials rating DO-T-8 issued for this Project.

Danville Municipal Authority
Borough of Danville,
Pennsylvania
Gannett Fleming Corddry & Carpenter, Inc., Engrs.
600 North Second Street
Harrisburg, Pennsylvania

Bids: December 7, 1951

Rocky Gorge Dam and Pumping Plant on Patuxent River Laurel, Maryland

Sealed proposals, addressed to the Washington Suburban Sanitary Commission for constructing the ROCKY GORGE DAM AND PUMPING PLANT on the Patuxent River near Laurel, Maryland, will be received in the office of the Commission, Hamilton Street, Hyattsville, Maryland, until Friday, December 7, 1951, at 11 A.M., Eastern Standard Time, at which place and time they will be publicly opened and read.

The dam will consist of an Ambursen Type reinforced concrete slab-and-buttress dam, about 725 feet long and 130 feet high, with earth embankments at each end.

Alternate bids will also be received on a mass-concrete gravity type dam.

The approximate quantities of the principal items of each of the two types of dam are as follows:

Ambursen Type Dam
- 8,500 c. y. Mass excavation, common
- 2,500 c. y. Trench excavation, common
- 1,000 c. y. Mass excavation, rock
- 2,500 c. y. Trench excavation, rock
- 25,200 c. y. Reinforced concrete in slabs, buttresses, piers, abutments and bridge
- 1,500 c. y. Mass concrete in cut-offs and fills
- 1,100 tons Reinforcing steel
- 5,000 s. f. Line drilling

Gravity Type Dam
- 11,000 c. y. Mass excavation, common
- 500 c. y. Trench excavation, common
- 19,000 c. y. Mass excavation, rock
- 1,500 c. y. Trench excavation, rock
- 35,000 s. f. Line drilling
- 5,400 c. y. Reinforced concrete in piers, walls, hearth and bridge
- 90,000 c. y. Mass concrete in dam and cut-off
- 370 tons Reinforcing steel

Items Common to Both Types of Dam
- 1,500 c. y. Earth embankment
- 2,500 c. y. Backfill
- 1,000 l. f. Drilling and grouting holes 25 ft. deep
- 2,000 l. f. Drilling and grouting holes 50 ft. deep
- 13 tons Structural steel in trash racks
- 7 Tainter gates, 15 ft. x 27 ft.
- 2 Traveling hoists for Tainter gates
- 1 48-inch free discharge valve
- 1 Caterpillar gate, 6 ft. x 6 ft., with hoist
- 3 Sluice gates, 6 ft. x 8 ft., with hoists

Pumping Plant and Pipeline, Common to Both Types of Dam
- 1,000 c. y. Excavation for pipeline, common
- 6,000 c. y. Mass excavation for penstock, rock
- 4,000 c. y. Mass excavation for pumping plant, rock
- 1,200 c. y. Mass excavation for substructure, rock
- 1,000 c. y. Reinforced concrete in superstructure
- 136,000 lbs. 60-inch diameter welded steel pipeline and penstock
- 3 Pumps with 600 hp motors, capacity 12,600 G.P.M. at 165-ft. head
- 3 Hydraulic turbines, 600 hp, complete

The Commission has received a CMP allotment.

The plans and specifications and bidding documents may be secured from the office of the Washington Suburban Sanitary Commission, Hamilton Street, Hyattsville, Maryland, or from the Commission's consulting engineers, Ambursen Engineering Corporation, 295 Madison Avenue, New York, or M & M Building, Houston, Texas. A deposit of $1.00 is required for each set of plans and specifications, which will be refunded in full upon their return in good condition within 15 days after date of bidding.

The right is hereby reserved to reject any or all proposals, and to waive informalities, as the interest of the Commission may require.

No bidder may withdraw his bid within 45 days after the opening thereof.

The successful bidder will be required to be bonded to the Commission to a sum equal to 100% of the amount of his proposal.

Each proposal must be accompanied by a certified check or bidder's bond for 5 per cent of the amount of the proposal.

WASHINGTON SUBURBAN SANITARY COMMISSION
Raymond W. Bellamy
L. S. Ray
J. Norman Ager
Commissioners

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3589) will be received by Bureau of Reclamation, Denver, Colorado, until December 11, 1951, and then publicly opened for furnishing labor and materials and performing all work for furnishing and installing 2 electrically operated passenger elevators, complete. The work is situated on the south fork of the Flathead River, 9 miles southeast of Columbia Falls, Montana. Time allowed for completion will be 360 days. For particulars, address Bureau of Reclamation, Columbia Falls, Montana; or Building 53, Denver Federal Center, Denver, Colorado.

TENDER NOTICE

Construction Plant for India

Directorate-General, Supplies & Disposals, New Delhi, India, invites tender # SPI/2243B/IV on forms (not transferable) obtainable from India Supply Mission, 635 F Street N. W., Washington, D. C., at $4.20 (not refundable) per set for supply and erection of Construction Plant for Bhakra Dam and Appurtenant Works comprising:

1. Aggregate Processing Plant comprising Crushing, Screening, Log Washing Units, etc.
2. Aerial Ropeway System for transport of Raw Aggregate, Processed Aggregate, etc.
3. Batching and Mixing Plants.
4. Concrete Transport Equipment.
5. Placing of Concrete.

The tenderers should submit their proposals by January 15, 1952, stating the amount required, if any, by way of reimbursement of cost, in order to carry out necessary survey in the first instance and thereafter prepare the schemes suitable for site conditions.

OFFICIAL PROPOSALS
(Continued from page 81)

Bids: December 11, 1951

San Jacinto River Dam

HOUSTON, TEXAS

Sealed *bids*, in duplicate, will be received by the City Secretary of the City of Houston, until 3:00 p.m. (CST), Tuesday, December 11, 1951, and at said bids will be opened and publicly read in the City Council Chamber at 3:15 p.m. on that date, for constructing the

SAN JACINTO RIVER DAM, INTAKE AND 72 INCH REINFORCED CONCRETE CONDUITS

The dam consists of an Ambursen Type reinforced concrete slab-and-buttress spillway 3160 feet long and 47 feet high, with earth embankments at each end. The following approximate quantities are required for the principal items:

- 80,000 c.y. Stripping
- 46,000 c.y. Core trench excavation
- 860,000 c.y. General excavation
- 50,000 c.y. Trenching, and finishing excavation
- 18,000 c.y. Backfill
- 360,000 c.y. Embankments, Impervious
- 755,000 c.y. Embankments, Pervious
- 250,000 c.y. Embankments, Unclassified
- 12,000 c.y. Topsoil
- 73,000 c.y. Reinforced concrete in foundation floors, mats, and paving
- 55,000 c.y. Reinforced concrete in buttresses, piers, deck slabs, abutments and structures
- 40,000 c.y. Gravel fill
- 4,000 c.y. Rockfill
- 2,000 c.y. Oyster shell road surfacing
- 6,500 tons Steel sheet piling
- 7,000 tons Reinforcing steel
- 20,000 sq. ft. premolded joint filler
- 3,600 lbs. copper water seals
- 2 Steel Tainter gates
- 2 Hinged steel flashboards
- 4 Electric gate hoists
- 1 Steel foot bridge
- 1 Intake tower, complete
- 1,150 Lin. Ft. dual 72" reinforced concrete conduit

The City has already purchased and will supply to the Contractor all miscellaneous steel and metallic items as follows: all reinforcing steel, cut and bent; all steel sheet piling; 2 Tainter gates and 2 steel flashboards, fully fabricated; 4 complete gate hoists with motors; 3 sluice gates and operating mechanisms with fabricated steel racks; all pipe rail, completely fabricated; steel foot bridge, completely fabricated; all miscellaneous and structural steel items required for dam intake tower and conduits completely fabricated.

The City has received a CMP allotment.

The plans, specifications and bidding documents may be secured from the office of the Director of the Utilities Department, City Hall, Houston, or from Ambursen Engineering Corporation, 295 Madison Avenue, New York or M & M Building, Houston, Texas.

Bids must be made on the standard proposal form, in duplicate, and must be accompanied by Cashier's check or Bidder's Bond in an amount equal to 10% of the total maximum bid price.

The City reserves the right to reject any and all bids, or to accept any bid deemed advantageous to it.

A deposit of $50 is required for each set of plans and specifications, which will be refunded in full upon their return in good condition within 15 days after date of bidding.

M. H. Westerman
City Secretary

October 17, 1951

U. S. Government

Department of Commerce, Bureau of Public Roads: November 1951 — SEALED BIDS will be received at the office of the Division Engineer, Bureau of Public Roads, 1410 Columbia Pike, Arlington, Virginia, until 11:00 a.m. E.S.T., December 6, 1951, for Project 1A4, Baltimore-Washington Parkway, Prince Georges County, Maryland, Bridge over B. & O. Railroad. The approximate quantities of the more important items are as follows: 26,500 cu.yd. Excavation, 2,780 cu.yd. Cement Concrete, 250,000 lb. Reinforcing Steel, and 20,000 lin. ft. Treated Timber Piling. Minimum wage rates have been fixed as required by law. Plans, specifications and proposal forms are available upon request at the address given above. H. J. Spelman, Division Engineer.

SEARCHLIGHT SECTION

(Classified Advertising)

EMPLOYMENT: "OPPORTUNITIES" :EQUIPMENT
BUSINESS: :USED OR RESALE

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$1.20 a Line, minimum 3 lines. To figure advance payment count 5 average words as a line.
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Box Numbers in care of our New York, Chicago and San Francisco Offices count as one additional line.

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The advertising rate $14.25 per inch for all advertising appearing on other than a contract basis. Contract rate quoted on request.
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New Advertisements received by November 26th will appear in the December 7th issue.

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ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. *Forty-first year. Write today.*

WILSON *Engineering Corp.*
College House Offices - HARVARD SQUARE, CAMBRIDGE, MASS.

SALARIED POSITIONS $3,500—$35,000

We offer the original personal employment service (established 41 years.) Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars.
R. W. BIXBY, Inc., 272 Dun Bldg., Buffalo 2, N.Y.

REPLIES (Box No.'s): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

ASSISTANT GENERAL Superintendent—Well established Northwestern Ohio General Contractor employing approximately 450 people on industrial, commercial and public work, has a permanent position for a young graduate Engineer or Building Contractor with at least ten years experience and a desire to get ahead in a growing organization. Please send full details of education, experience, salary wanted, age and other pertinent information. care of P-2469, Engineering News-Record.

DESIGNERS AND Checkers — Experienced in Structural Steel and Reinforced Concrete. Long work program on Power Plants, Chemical Plants, Oil Refinery, and other Industrial Projects. Large, established engineering firm in Philadelphia, offering excellent employee benefits and premium pay to all over-time work. P-2352, Engineering News-Record.

ENGINEER EXPERIENCED in the design and construction of earth dams for established organization, preferably with working knowledge of soil mechanics, concrete control, and hydrology for the preparation and review of plans and specifications, report writing and field investigations and inspections. Some travel and public relations required. Salary open. Location Pennsylvania. Address P-2432, Engineering News-Record.

ESTIMATOR; PERMANENT position with long established general contractor in Elizabeth, N. J. area. Must be experienced in industrial construction quantity takeoff and pricing. Submit full resume, stating experience, education, age, availability and salary expected. P-2419, Engineering News-Record.

HEATING AND Refrigeration Engineer wanted. Must be capable of handling mechanical layout, design and supervision of such installation. Locations of offices served are Racine, Wisconsin; Waukegan, Illinois; Lake Forest, Illinois and Evanston, Illinois. Pay commensurate with ability. The firm is one of the largest plumbing, heating and refrigeration companies between Chicago and Milwaukee, and is expanding its services yearly. Stiles & Horne, Inc., 648 North Western Ave., Lake Forest, Illinois.

HIGHWAY AND Sanitary Engineers—Positions for highway Draftsmen and designers, Office Engineers, water and sewerage and draftsmen. Good pay for qualified men in accordance with experience. Opportunities for advancement. Write and furnish full information regarding education, training and experience, age, references and salary requirements. All replies considered strictly confidential. Department of Public Works, Baltimore County, Towson 4, Maryland.

(Continued on page 84)

CONSTRUCTION SUPERINTENDENTS

Large Utility Company on East Coast wants Construction Superintendents to assume complete field supervision of construction of large modern steam electric generating stations. Graduate engineers preferred. Applicants must have recent experience, and be familiar with modern power plant equipment and methods. A long range expansion program offers excellent opportunity for the future.

Write giving full particulars of education, experience and salary expected to

P-2477, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

SALES MANAGER
WANTED

Prominent rigid western manufacturer of construction equipment has a position available as sales manager for one of its product lines consisting of medium to heavy earthmoving and excavating machinery. If you have had sales experience in this field . . . can show a successful record demonstrating the executive ability necessary to efficiently manage a sales office and field sales force . . . are able to administer and sales promote a dealer organization of over 200 dealers to a continuing high level of activity in the never ending search for business . . . and are looking for a challenging opportunity, please get in touch with us.

P-2462, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

MATERIALS ENGINEER

Permanent position with Sound Company

Civil or chemical engineering degree required. Must be able to pass P.E. exams. Must have intimate knowledge concrete materials, mix design and control. Side knowledge soils, asphalt or steel fabrication helpful.

$4,500—$6,000
Depending on background

Location East Coast. Give complete information in first letter.

P-2481, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

DESIGNERS

We need men with experience as:

Structural Designers

Concrete Designers

Electrical Designers

Piping Designers

Checkers

Men should have experience in Blast Furnaces, Steel Mill, Oil Refinery or other Heavy Structural Design.

Positions available in our offices at Cleveland, Ohio and Union, New Jersey.

We pay among highest rates plus annual profit-sharing bonus.

Our continuous expansion and growth offers many fine future opportunities.

WRITE.

ARTHUR G. McKEE & Co.
2300 Chester Ave., Cleveland 1, Ohio

HIGHWAY SUPERINTENDENT

The County of Manatee, State of Florida, is accepting applications for the position of Superintendent of Highways. Duties of this position will include supervision of highway and bridge maintenance, new highway and bridge construction, survey and mapping of right-of-way, layout, etc. Applicants should be graduate C.E. with minimum of ten years experience in road and bridge construction and maintainance, capable of assuming full responsibility for operation and planning of a county highway system.

Address all applications to

BOARD OF COUNTY COMMISSIONERS
Court House, Bradenton, Florida

Permanent Positions Open to ENGINEERS

. . . after training at full-time pay . . . as

Consultants in Fire Protection Engineering

to top U. S. and Canadian industry. Usual pension and other benefits. Excellent opportunities; fast-growing engineering organization.

Write complete qualifications to:
P-2447, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

DRAFTSMEN

2-10 years exp. in structural steel or concrete. Engineering degree preferred. Permanent position. New York office.

UNIVERSAL ATLAS CEMENT CO.
100 Park Ave., New York 2nd Floor

ENGINEERS
DESIGNERS & DRAFTSMEN

Electrical, Mechanical
Structural & Hydraulic

Reinforced Concrete
Designers & Detailers

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Long term openings in permanent offices located at Cleveland, Ohio and Frederick, Maryland offering good salary plus overtime (forty eight hour week) for qualified Engineers, Group Leaders and Designers experienced in one or more of the following phases of industrial plant design:

Process Piping	Plumbing	Heating and Ventilation
Instrumentation	Tanks and Vessels	Refrigeration
Process Equipment Layout	Boiler Houses	Sprinklers
Packaging	Plant Layout	Water Treatment
Air Conditioning	Conveyors	

Limited number of openings for Estimators experienced in Mechanical and Chemical installations as well as building construction.
Also have a number of openings in our Cincinnati and New York City offices for similar type personnel.

Excellent working conditions with paid vacations, sick leave plan and participating Group Insurance Program.
Please submit complete resume stating experience, education, salary required and date available to:

The H. K. FERGUSON COMPANY
Engineers and Builders
FERGUSON BUILDING CLEVELAND 14, OHIO

ESTIMATOR

Permanent position for a man approximately 35 years old with large Pittsburgh General Contracting firm. Must be thoroughly experienced in Commercial, Industrial, and Institutional building construction. Equal emphasis is placed on pricing as well as quantity takeoff. Salary limited only by applicant's ability and experience. Submit information stating experience, education, age, and availability. Replies confidential.

P-2153, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

ENGINEERS

for design and construction of several major municipal projects. Starting Salaries: $3707, $4514, $5534, $6143, $7036 per year. Write

DETROIT CIVIL SERVICE COMMISSION
735 Randolph St. Detroit 26, Mich.

ANNOUNCEMENT

POSITION OPEN

The University of Tennessee, Division of University Extension is conducting an open recruitment program in an effort to reach qualified persons interested in submitting applications for the position of Executive Director, Municipal Technical Advisory Service. Annual salary is $8,000-$9,600. Desirable qualifications are a Batchelor's degree in public administration, business administration, engineering or some related field and a minimum of six years of actual experience.

For further information or additional details please write to:

DEAN F. C. LOWRY
Division of University Extension
Box 8540 U. T. Station
Knoxville 16, Tennessee

POSITIONS WANTED
(Continued from page 82)

LARGE OLD and successful engineering and construction firm in eastern U. S. requires General Manager to take charge entire construction department. Steam electric and hydro-electric plants experience desirable. State in first letter full details of education, experience, age, salary range expected, availability. Write P-2459, Engineering News-Record, 330 West 42nd Street, New York 18, New York.

MATERIALS ENGINEER—C. E. experienced in highway materials, permanent, good salary and opportunity. Give full information. P-2467, Engineering News-Record.

MIDWEST ENGINEERING firm needs Electrical Engineer. Prefer over 40 years of age, graduate, qualified for registration several states. Varied experience. Permanent position or association. Furnish complete qualifications. Reply P-2459, Engineering News-Record.

WANTED DRAFTSMAN to prepare placing plans for Concrete-Reinforcing Bars and Steel Bar Joists. Apply giving age, experience and salary required. Southern Engineering Company, P. O. Box 1087, Charlotte, North Carolina.

WANTED—GENERAL Building Construction Superintendent with great experience in handling more than one contract, for permanent job in St. Louis, if satisfactory. Very good salary with chance for bonus at year's end. Needed by Jan. 1, 1952. Write Gamble Construction Co., St. Louis, Mo.

POSITION WANTED

SUPERINTENDENT - PROJECT Manager, graduate Civil Engineer 48, contract negotiations, accurate estimator, successful record of customer and labor relations. Top field organization and supervision, layouts, 25 years industrial, dams, hydros power houses, bridge, highway, docks, foundations, cofferdams, piledriving, hotels, chainstore and housing. Foreign service 16 years, Africa, South America, etc. Speaks many languages. Location not important. New York telephone, Wisconsin 7-0200, ext. 807 or write Box PW-2365, Engineering News-Record.

BUILDING CONSTRUCTION Superintendent or General Superintendent 25 years experience. Thoroughly familiar with all types of Building Construction. References. E. Harold Bowen, General Delivery, Camden, Delaware.

CHIEF ENGINEER—Electrical and Mechanical, power and central. Broad technical, supervisory and administrative experience desires to make a change. PW-2486, Engineering News-Record.

CIVIL ENGINEER, 30, B.S., 9½ yrs. heavy const. experience as field, cost, and materials engineer for contractor desires engineering or supervisory position enabling perm. location in Midwest. PW-2460, Engineering News-Record, 520 N. Michigan Ave., Chicago.

CONSTRUCTION MAN, broad field and office experience on finished and industrial buildings, docks, heavy construction, solicits inquiries from contractors needing high grade man to take full charge. PW-2461, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT, age 42, 20 years construction experience. Bldgs., all types schools, city bldg., water plants, sewer disposal and factories. Have good record as a good organizer and manager, understand costs of labor and material. Not afraid of long hours and work. Can give good references. Wish to locate in Southwest U.S.A. PW-2467, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT, considerable experience concrete pipe manufacture, machine and cast pipe. PW-2441, Engineering News-Record, 330 W. 42nd Street, New York, N. Y.

STRUCTURAL ENGINEER, age 36, graduate, licensed Washington State. Eleven years experience all types of reinforced concrete, steel and timber structures. PW-2478, Engineering News-Record.

SPECIFICATION WRITER

Available now, a mechanical, electrical, civil & mining engineer with many years' experience in writing purchase specifications, & buying equipment for big engineering projects located here & in foreign countries. Familiar with government purchase requirements.

PW-2465, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

Engineer - Executive - located at H. Bomb Plant

Will represent Engineers, Contractors or Manufacturers wishing direct contact with this project.

P. O. Box 313—Allendale, S. C.—Tel. 2347

POSITIONS WANTED

SUPT.—HEAVY Blasting, Earth moving and extensive experience with Coral Rock. PW-2451, Engineering News-Record.

PART TIME WORK WANTED

CIVIL ENGINEER, free lance N. Y. prof. Eng. license with 25 years experience reinf. concrete design, bar detailing, Steel, timber design. Seeks part time work. PTWW-2458, Engineering News-Record.

WORK WANTED

Small Group of Structural designers and draftsmen available. Experienced in steel and concrete bridges and foundations. WW-2353, Engineering News-Record.

Three Graduate Engineers experienced in advanced structural design, material handling equipment, sanitary engineering problems, road and track layout, specification writing, and estimating, desire positions together. Capable of handling complete design of industrial buildings. Location optional. WW-2454, Engineering News-Record.

PATENT ATTORNEY

CONSULT: Z. H. POLACHEK, Reg. Patent Attorney, 1234 Broadway, New York 1, N. Y.

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A.C.R. Co. 90
Air Compressor & Pump Corp. 89
Albert Pipe Supply Co. 90
Albro Steel Co. 87, 88
American Air Compressor Corp. 86
Atlantic Dredging & Construction Co. .. 91
Aube Equipment 88

Bass, G. A. 89
Bass Engineering & Construction Co. .. 90
Bendix Machinery Co., Inc. 88
Bixby Inc., R. W. 82
Boyer, R. H. 87
Bradenton, Fla., Board of County Comm. 83
Brewster & Son, George M. 88
Buff 84
Builders Service 91

Chicago South Shore & South Bend R. R. 88
Contractors Machinery Co. 86
Contractors Syracuse Sales Co., Inc. .. 91

Darien 89
Del-Strat Corp., The 90
Detroit, City of 83
Drachman Steel Corp., Hy. 88
Dravo-Doyle Corp. 88, 91

Equipment Corporation of America ... 87
Eveready Supply Co., The 91

Ferguson Co., H. K. 83
Forsythe Equipment Co., Inc. 88
Foster Co., L. B. 90, 91
Frank, M. K. 91
Frazier-Davis Construction Co. 91
Franciose, Angelo 90

George & Lynch, Inc. 86
Greenpoint Iron & Pipe Co. 90
Greensburg Machine Co. 87
Groves & Sons Co., S. J. 86, 89
Grow Construction Co., Inc. 90

Harris Structural Steel Co., Inc. 90
Heat & Power Co., Inc. 88
Hemisphere International Corp. 89
Hickerson, Roy D. 84
Hines, Construction Co., Inc., E. H. .. 89
Hodge & Hammond Inc. 87, 89
Howard Steel Erecting Co. 89
Hyman-Michaels Co. 89

Industrial Sales Corp. 91
Ingersoll, Chas. M. 89

Johnson Construction Co., W. L. 89

La Porte, J. A. 89
Larsen Piling Corp. 90
Lestan Corp. 88

Main, Inc., Charles T. 83
McKee & Co., Arthur 83
Metropolitan Water District of Southern California, The 88
Midwest Steel Corp. 91
Mississippi Valley & Equipment Co. 86, 90
Morrison Railway Supply Corp. 91

National Blue Print Co. 84
New London Sand & Gravel Co., Inc. .. 91

Ocker, George S. 90
O'Neill, A. J. 86

Reading, Inc., Eugene P. 87

Schoonmaker Co., A. G. 86
Shannon & Co., J. Jacob 88
Smith, Inc., L. B. 85

Tagco Inc. 90
Tennessee, University of 83
Turpin Co., J. H. 90

Universal Atlas Cement Co. 83

Vilbro Equipment Co., Inc. 89
Vulcan Iron Works 87

Walsh Co., Richard P. 86
Warren-Knight Co. 84
Weiss Co., B. M. 87
Wilson Engineering Corp. 82

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OFFERS

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Schramm 105 cubic foot gas powered compressor on 4 steel wheels.
Ingersoll-Rand 105 cubic foot, Waukesha gasoline power, on two rubber tires.
Gardner-Denver 160 cubic foot gas powered compressor on 4 steel wheels.
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Pennsylvania 12" x 10" class 3A single cylinder, 353 cubic foot P.D., flat belt driven 50 HP slip ring motor.
Worthington two-stage, water-cooled, vertical 250#, 60 CFM, new condition.
Paving breakers, jackhammers, wagon drills, tie tampers.

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Cedarapids 2036 AAA unit with feeder, etc.
Cedarapids Jr. Tandem roll & jaw unit.
3033 Cedarapids Hammermill, Rebuilt.
10x7 Allis-Chalmers Blake type jaw crusher.
#1 Cedarapids Kubit impact breaker.
4' x 6' Kennedy Van Saun single deck.
4' x 6' Kennedy Van Saun double deck.
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42" x 24' revolving screen.
18" x 90' bucket elevator.
60-ton, 2-compartment, 8'x18' storage bin with clamshell gates.
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1½-ton Ford with any body.
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1949 White Model WC26 dump trucks, new condition.
2000-gallon tanks on semi-trailer mounting.
New and rebuilt dump bodies.
2,000 gallon tanks on semi-trailer mounting.

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1½ KW to 125 KW, alternating and direct current, gasoline and diesel powered.

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Buda, Hercules, Hill diesels, rebuilt.
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SHOVELS—CRANES

Lorain L-50, 1-yd. diesel.
L-41 diesel powered ¾-yd shovel, rebuilt.
Brownhoist 1-yd. gas shovel and crane.
Universal truck crane.

SHOVEL & CRANE ATTACHMENTS

Lorain 40A shovel attachment complete.
P&H 203 shovel attachment.
Chain crowd Lorain 30A shovel attachment.
Lorain 40 Hi-Lift shovel attachment.
Bucyrus-Erie 1½-yd. rock bucket.
Lorain 80-820 fairleads.

Backhoe Buckets & Attachments

Lorain 30 hoe attachment complete.
¾-yd Lorain, 40, LBS #6105, 44" cutting width.
26" outside width solid bottom type LBS #4377, good condition.
¾-yd Amsco 40" cutting width, LBS #8101.

CLAM—DRAG—SCRAPER BUCKETS

NEW TAGLINES

McCaffrey Model 648 for 1¼ to 2-yd crane.
McCaffrey Model 636 for ¾-yd to 1-yd crane.

SHOVEL DIPPERS

Lorain 41, ¾-yd. LBS #8600, rebuilt.
New Lima 1-yd, Amsco, LBS #2295.
Bucyrus-Erie 1¼-yd gas air, LBS #3782, fair.
Lorain 75B, 1½-yd. manganese bucket, LBS #8538.
Lorain 75B, 1¼-yd extended lip, 1¾-yd LBS #2260.
Pettibone-Mulliken 2-yd Lorain 82 or 820, manganese, LBS #5361.
Pettibone-Mulliken 2-yd for 3500 Manitowac LBS #5763.
Esco 2½ yd cast weld dipper with bail & teeth

CONCRETE ROAD BUILDING & MISCELLANEOUS CONCRETE HANDLING EQUIPMENT

Concrete Finishers

Jaeger type "L" double screed, 10½'-12½', rebuilt.
Heltzel 10'-12' finisher, rebuilt.
Blaw-Knox gas-electric 10½'-12½', rebuilt.
2 Koehring 10'-12', rebuilt.

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1220'—Heltzel 9"x8" forms with stakes.
1430'—Heltzel 10"x8" forms, with stakes.

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Cleveland formgrader, new 1944, rebuilt.
Carr formgrader, new 1944, rebuilt.

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Sanderson-Cyclone #44 well drill, new.
Bits—Stems—Bailers—Sockets—Etc.

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Austin Western 77 tandem drive, scarifier, 12' blade, gas power, hydraulic controls.

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L.B.SMITH INC. CAMP HILL, PA. SUBURB OF HARRISBURG

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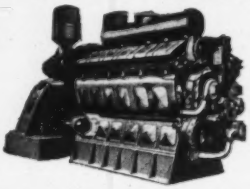

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KVA	Make	Model	HP	RPM	KVA	Make	Model	HP	RPM
1875	Fairbanks Morse	33F16	2000	300	375	Enterprise	DSG-6	450	450
1420	Fairbanks Morse	38D8¼	1600	720	330	Superior	KN4	396	514
1250	General Motors	16-278A	1600	720	312	General Motors	8-268A	450	1200
937.5	General Motors	12-567	1080	720	312	Clark	MD-4	375	327
625	Alco	6-12¾x13T	750	600	125	General Motors	3-268A	150	1200
425	Baldwin	VO-6	510	450	75	General Motors	6043C	90	1200
400	Buckeye	80	480	600	62.5	Int'l Harvester	UD-18	76	1200

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DIESEL MOTOR: 122 H.P. Caterpillar D13000 complete with clutch, V-belt pulley and spare parts. Excellent condition.

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2—Jeffrey 5 ft. x 9 ft., heavy duty type Vibrator Feeders, with three extra heavy power units on each, 3 phase, 60 cycle, 440 volt.

DRAG SCRAPERS: 1 — Sauerman 2 yd. Drag Scraper outfit complete, without 75 H.P. motor.
1—Sauerman ¾ yd. capacity complete with 30 H.P. motor. 1—Sauerman 1-½ yd. capacity complete with 60 H.P. motor.

MINE HOISTS: Vulcan double drums 8' dia., 4 ft. face, one drum clutched, 1-½" rope, 750 FPM, 200 H.P., 2200 volt, motor and all control and safety devices. 1—Vulcan single drum 6'6" dia., 6'8" face, 1-¾" rope, 450 FPM, 150 H.P., 2200 volt motor and all control equipment.
Also, single and double drum 100 H.P. to 1500 H.P.

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1—Symons 2 ft. with coarse bowl without motor.
1—Symons 3 ft. Short Head with fine bowl and one Traylor type TY, 2'4" with 9" opening, with 75 H.P., 440 volt motors, V-belt drive.

LOCOMOTIVES: Brookville 6 ton, 36" gauge, diesel powered, used less than 900 hours.
1—Goodman 10 ton, electric mine Locomotive, 36" gauge, 250 volt, D.C.

SHOVEL & CRANE: 1—Lima model 1201, diesel, 3-½ yd. cap., used only eleven months. 1—Lima 802 diesel Crane, long cats, wide treads, 120 ft. boom, 20 ft. jib, power boom, 50 ton capacity, excellent condition, very desirable for steel erecting or dragline or crane work.

A. J. O'NEILL

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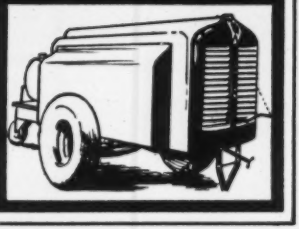

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4 Steam piledriving rigs.
Steam boilers and leads.
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Air Hoists.

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1—Bucyrus-Erie 54B Diesel Standard Shovel completely overhauled, ready to go. Location New Jersey.

Lima Type 1201 Loading Shovel, 3¼ c.y. Dipper, 28 ft. stick. New 1946. Located Mountain Iron, Minnesota.
Price $37,500

111 M Marion Standard Shovel Attachment, 30 ft. boom, 23'8" Stick, 3¼ yd. Manganese Bucket. This item is brand new. Located in Johnstown, Pa. Immediate delivery at considerable less than replacement cost.

Manitowoc model 2000B 1 ¼ c.y. Combination standard shovel and dragline with Caterpillar D-13000 diesel. Good condition.
$22,000 FOB Johnstown, Pa.

1—Bucyrus-Erie 54B Hi-Lift Shovel Front with 45' Boom. 32' Tubular Steel Handle, and two c.y. Dipper. Location Johnstown, Pa.

Lima Type 1201 Standard Shovel and Dragline. Long Crawlers, Wide Tread, 32' 6" Shovel Boom, 22' Dipper Handle, 3 c.y. Dipper, 80 ft. Dragline Boom complete with fair leads, etc. 1500 KW Light Plant in excellent operating condition. Serial number 5289. Cummins Type L. Diesel, in good operating condition.
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Le Tourneau, model W Scrapers, all in good condition, two rebuilt since last use, 2400x29 tires 75% or better. Location New Jersey.

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FOR SALE OR RENT

THREE (3) bottom dump Euclids Model 70 FDT 89W with 6094 GM 190 H.P. Motors. Front Tires 12x24 Tractor and Trailer Tires 24x25 Tires. Serial No. 12281—12282—12283. The above equipment is three months old. Sale price $23,000 each.

TWO (2) bottom dump Euclids Model 67 FDT 58W with 6094GM 190 H.P. Motors Front Tires 12x24, Tractor and Trailer Tires 21x24 Tires Serial No. 11147—11148. The above equipment is two months old. Sale price $22,500 each.

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UNION MONOTUBE PILES

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12 ft. 36" C.I. Class C Pipe
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1 Model C Scoopmobile with 1 yard bucket
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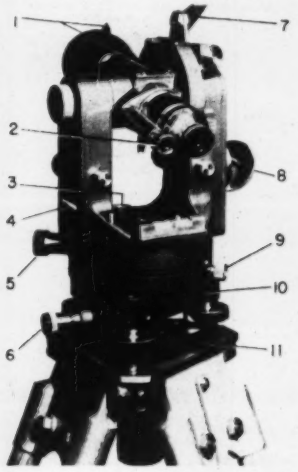
NEW PRODUCTS

Precise Italian optical transit on the job in New York boasts 10 innovations suggested by U. S. engineers who tested it.



Features are: 1—Telescope rifle sights, 2—Eyepiece, 3—bullseye level, 4—repeating lever, 5— and 9—horizontal tangent and clamp screws, 6—optical plummet, 7—zenith level mirror, 8—illuminating mirror, 10—triangular base, 11—base plate.

New optical transit has everything

By James M. Connolly
Associate Editor

What should a reputable foreign manufacturer do when he has what he believes is the finest transit available, but knows little about American markets and engineers' demands? In the case of Filotechnica Salmoiraghi S.p.A. in Milan, Italy this is what happened: They sent optical transits to several universities, survey companies and consulting engineering firms, requested that they test it against current models and sent it back with their suggestions and ideas for incorporation into a newer model which would include everything that U. S. engineers, surveyors and transitmen have wanted. The instruments were tested and sent back with 12 suggestions, 10 of which were accepted and incorporated. Later at least one improved model was purchased by each of the testing outfits.

Its compact design permits all operations from first leveling to final reading of angles to be controlled from behind the instrument. This is an especially valuable aid on rugged ground and in tunnels, for instance, where the need to step around the instrument is particularly annoying and may even be hazardous to the tripod setup. Initial setup is greatly speeded by use of a spherical (bullseye) level and three-point base support which precludes all compensating screw adjustments. The circles, leveling threads and all delicate parts are completely enclosed to insure against dirt.

• **The optical plummet**—There is no plumb bob on the F/S 4150 R model; instead an optical plummet works in periscope fashion. Precise centering is possible in less time without the annoyance of a plumb line swinging because of wind or vibrations. Looking horizontally, the operator sees the plummet reticle circle whose center is the projection of the instrument axis upon the exact ground point. The tripod head allows a generous shifting radius of two full inches.

• **Circles**—These are made of glass, with diamond-etched hair lines. They have a 3-in. diameter, compared with standard 7- or 8-in. The optical reading system eliminates reading glasses, verniers and parallax errors. Both horizontal and vertical angles can be read at a glance to 6 seconds by viewing through the microscope evepiece next to the telescope. A special outside, adjustable mirror reflects light inside the instrument to permit easy scale readings during all daytime conditions. For night work (or in tunnels and mines) a small battery lamp is attached which illuminates both circles, telescope crosshairs and the principal lever.

• **The repeating lever**—Facilitates repetition of angles and at the same time eliminates one set of horizontal controls. When the lever is up, the horizontal clamp and tangent screws are the upper motion controls; when it's down, they're lower motion controls. This horizontal clamp is fixed to the bottom section and does not travel (as other transit controls often do) on the upper, rotating alidade portion of the instrument.

• **Telescope**—The 4150 R's internally focussing telescope has 29 power magnification. It's fully reversible and provided in both positions with front and rear rifle sights for rough preliminary pointings. Both single and double crosshairs are provided. (This was another suggestion since many surveyors find it easier to center a point between two closely-spaced hairs while others like to impose a single line directly over it.) Horizontal and vertical stadia hairs are in 1/100 ratio. Stadia hairs are shorter than sighting hairs to eliminate confusion.

Special accessories include a striding compass, telescope level, traverse sight, steep slope eyepiece prisms and an optical distance-measuring device with accuracies up to 1.5000. The instrument weighs 9 lb., 14 oz. and comes in a compact carrying case which contains sunshade, eyeshade, eyepiece filters, adjustment spanners, etc. Several regional representatives are already handling sale, demonstration and repair or adjustment of the instrument. Others are being currently set up. U. S. representative is TRANS-GLOBAL CO., 1474 BROADWAY, N. Y. 18, N. Y.

(Continued on page 95)

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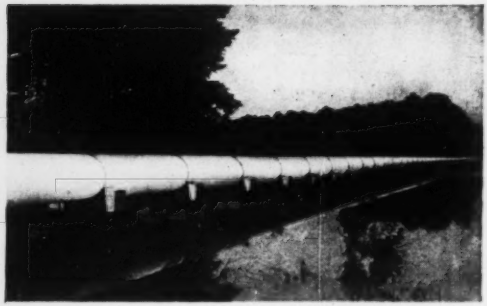
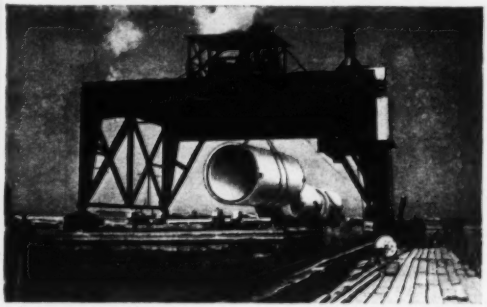


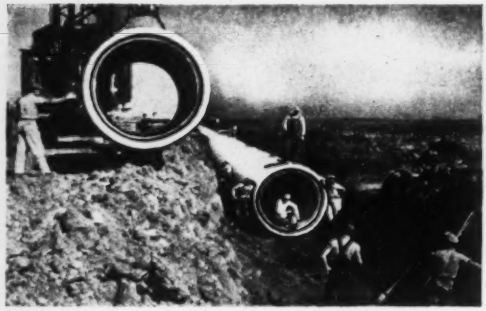
Lee Hall Reservoir crossing, part of the 237,400′ of 24″, 27″, 34″ and 39″ Lock Joint Reinforced Concrete Cylinder Pipe supplying water to the Newport News shipyards.



Loading a section of 120″ Lock Joint Reinforced Concrete Subaqueous Pipe for 18,500′ Nottingham Intake, supplying water for the City of Cleveland.

Build for the future... with

LOCK JOINT CONCRETE PRESSURE PIPE



Tulsa's new water supply line includes approximately 280,000′ of 84″, 72″ and 66″ Lock Joint Reinforced Concrete Pressure Pipe.

Lock Joint plant where 233,000′ of 69″ and 66″ Prestressed Concrete Cylinder Pipe were manufactured for the Rio de Janeiro water supply line.

The building of a water supply line represents a large and extremely important investment. For this reason every effort is made to select the most dependable and permanent type of pressure pipe for the project. Investigation to determine the most reliable pipe available will show that Lock Joint Concrete Pressure Pipe has proven its superiority by years and years of unparallelled performance.

The permanence of Lock Joint Pipe eliminates any necessity for replacement of the line. The conservative design of its steel reinforcement avoids the dangers of blow-out or rupture while providing an ample safety factor for unusual internal pressures and heavy backloads. Dense concrete walls prohibit tuberculation or corrosion and assure extreme durability and life-long high carrying capacity.

In short, Lock Joint Concrete Pressure Pipe provides permanence, efficiency and safety for one of the most vital and essential public utilities. For your next water supply project involving pipe 16″ in diameter or larger, specify Lock Joint—the pressure pipe whose future has been proven by its past.

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Est. 1905

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New hoe attachment extends digging depth

A newly designed hoe attachment for the Koehring 304 excavator will increase the machine's digging depth to 19 feet 9 inches, according to a recent announcement by the manufacturer. Officially rated as a ¾ yard excavator, the 304's sturdy dipper arm is pivoted at the end of the boom and jacknifes to dig a vertical backwall. This reduces hand cleanup time to a minimum in basement digging. Another important advantage is the position of the counter shaft in line with the boom foot mounting. Dipper drift is eliminated when the boom is raised and a versatile arrangement provides top production capacity. Adjusting links on the dipper arm allow for three variable settings so that the dipper angle can be matched to the type of material and cut being made. Double digging lines run out to the dipper, and eliminate reverse cable bends and sheaves which might very well clog with material and add to cable wear. The dipper can thus be pulled up tight to the boom for increased efficiency and less spill-over. The Koehring Company, Milwaukee 16, Wisconsin.

New plastic piping

Since the early stages of World War II when metals were extremely critical in Europe, unplasticized polyvinyl chloride extrusions have been widely used. Chemical plants used this type of piping as a replacement for special alloys to carry both acids and alkalis. This is the principal reason for the appearance of a new corrosion-resistant

(Continued on page 96)

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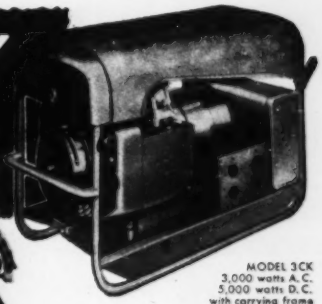

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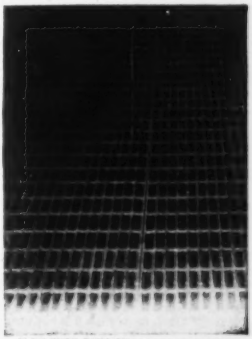

1. Strong electroforged construction for easy installation.

2. Maximum Open Area for light and air.

3. Easy to Maintain . . . paint reaches entire surface.

4. Self-Cleaning, no sharp corners to clog.

5. Safe footing at all times with twisted cross bar.

Write for complete specifications

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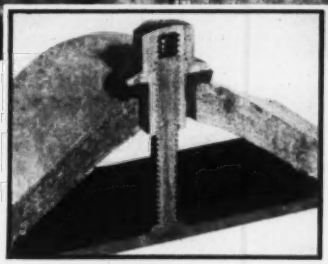
BLAW-KNOX *Electroforged* STEEL GRATING AND STAIR TREADS

FOR BETTER INSTALLATION OF CORRUGATED ASBESTOS

Operator end-welding a stud to girt through pre-drilled hole in the corrugated sheet. Split-second welding is done with a press of the trigger of the Nelweld gun.



Sectional view showing collar-nut (integral nut and sealing collar) run down on a Nelson threaded stud, making a permanent watertight seal. Collarnuts are furnished with Neoprene or lead collars, and only one size stud is required.

YOU'LL FIND IMPORTANT ADVANTAGES WITH *NELWELD*

Several important advantages are gained by installing corrugated asbestos roofing and siding with the time-proved Nelweld method of fastening.

First, Nelweld fasteners provide higher quality finished installation—strong, weatherproof, and with an attractive trim appearance. In addition, the Nelweld method cuts costs by eliminating all interior scaffolding—all fastening being done from the outside or top side of the structure. Elimination of clips, bolts, and other fasteners on the inside surface reduces maintenance costs. Nelweld fasteners minimize stocking problems too, because one size stud meets all requirements.

Full information and Nelweld Engineering Service are available to show the advantages of Nelweld methods as applied to your specific construction problem. Contact your nearest Nelson representative or write Dept. E-1, Lorain, Ohio.

Nelson corrugated asbestos fasteners are distributed nationally by the Philip Carey Mfg. Co. and Johns-Manville . . . Nelson Approved Applicators throughout the country can estimate and install your corrugated roofing and siding with this high quality method . . . Nelweld equipment is readily available for rental or purchase from Authorized Dealers.

Faster it Better...at Less Cost, with NELWELD

NELSON STUD WELDING

DIVISION OF GREGORY INDUSTRIES, INC., LORAIN, OHIO

New Products . . .

plastic piping called "Tuffstuff," and the manufacturer expects to find wide use for it in the chemical, petroleum, mining and plumbing fields.

In the manufacture of rayon for instance, it was found that this plastic was not subject to deterioration like conventional metallic carriers. It is extruded in U. S. Standard pipe and tubing sizes; is rigid, but not brittle. Welding, cementing and bending may be easily accomplished by the usual techniques. CLOPAY CORPORATION, CINCINNATI, OHIO.

Sealing film for tunnel passages

Coal mines and tunnels can now improve ventilation, reduce operating costs and forestall somewhat the crumbling of roof and ribs with a new Vinylite resin-based solution similar to that used to protect military equipment. Sprayed over cloth-covered temporary or permanent shaft stoppings, for example, the solution forms a film which tightly seals the stopping against moisture, gases, and loss of fresh air into a blocked shaft. Said not to mildew or rot, and also said to be highly resistant to abrasion, moisture and acids, the film's high tensile strength and elasticity enable it to survive air shocks and normal abuse without breaking seals.

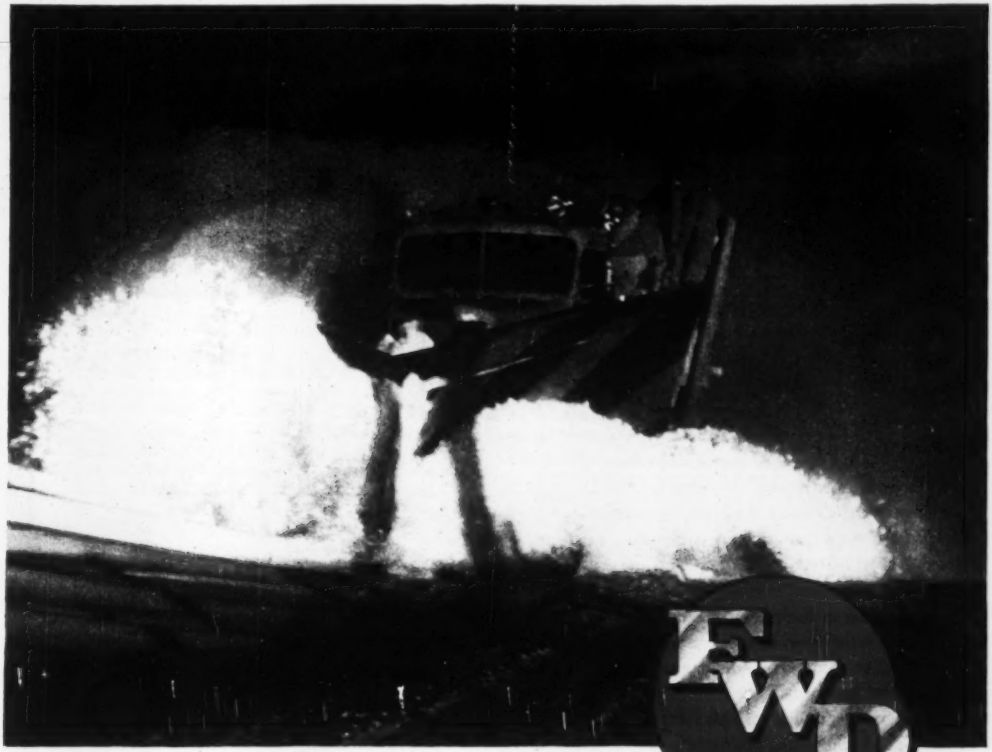
Standard pressure spray equipment—tank, gun, hose and compressor—serve to apply the film along main haulageways without interfering with normal operations.

The sprayable solution also answers the problem of sealing permanent stoppings made of tile, brick,

(Continued on page 100)

Choose FWD-Choose America's first choice for snow and ice control

More communities buy more FWDs for snow and ice control than any other 4 x 4 truck! Not only because they lick snow and ice problems better, faster, easier . . . but because when winter ends, FWDs keep right on working, doing other heavy-duty highway and street maintenance jobs — just as fast, just as easy. FWD's better distribution of weight and power means less strain on every job . . . provides up to twice the truck life . . . keeps maintenance down . . . gives more return on taxpayers' dollars. Models from 14,500 to 60,000 lbs. GVW — 4 and 6 wheel drives. See your nearby FWD distributor for full facts or contact FWD direct.



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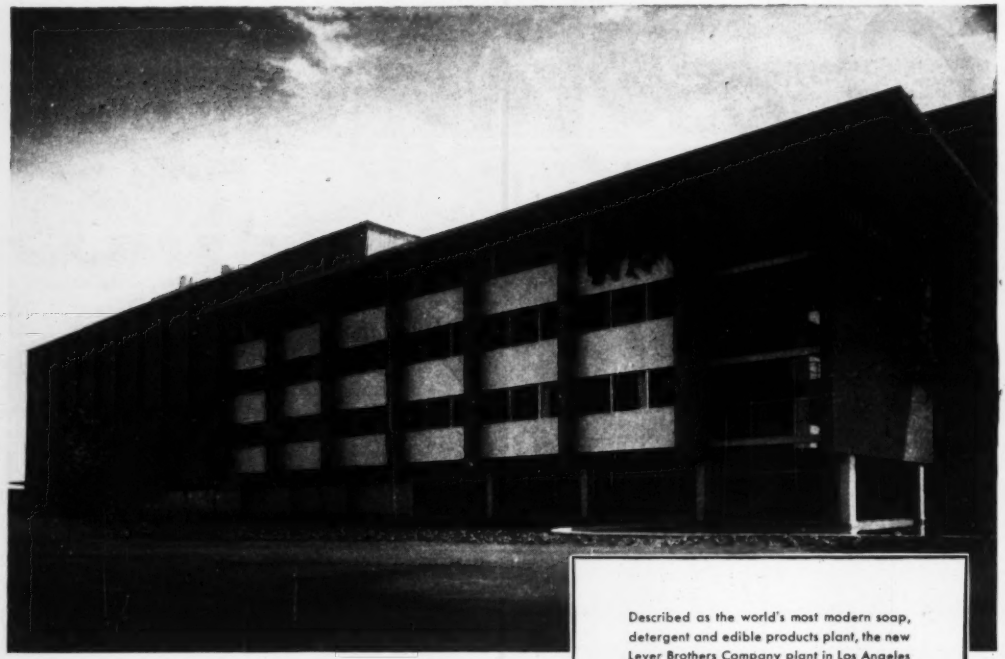
America's Foremost Heavy-Duty Truck



Described as the world's most modern soap, detergent and edible products plant, the new Lever Brothers Company plant in Los Angeles consists of six separate reinforced concrete and steel buildings which cover over one-third of the 30-acre tract. Over 1,200,000 square feet of concrete in the project were formed against ⅝"-thick Exterior plywood concrete form panels. Walls were cast against built-up form sections made by nailing panels across 2x4 studs, 12" o.c., backed by 2x4 walers, 24" o.c. Fluted effect on the building was achieved by fastening tapered 1½"-deep wood strips, 6" o.c., to plywood form face. Concrete floor slabs were poured on plywood forms braced with 2x6 and 2x8 joists, supported by 4x4 shores. Bechtel Corporation, Engineers-Constructors is responsible for the complete construction of the project including design and procurement and installation of the structure and process equipment. Welton Becket and Associates served as architectural consultants.

On New Lever Brothers Company Plant—

Plywood Forms Specified For Smooth, Fin-Free Concrete And Overall Job Economy

BECAUSE of the great amount of concrete work involved, Bechtel Corporation, designers and builders of the giant Lever Brothers Company soap and detergent plant, planned the structure with special form problems and their solutions in mind.

Plywood concrete form panels were chosen for two reasons: first, because they would create the smooth, fin-free surfaces required to carry out the design of the structure; and second, because the panels were ideally adapted for fabrication into cost-cutting built-up form sections which could be slipped up the building intact as work progressed.

According to Bechtel engineers, "plywood's performance was satisfactory in every respect. The panels created smooth, even-textured concrete, helped reduce formwork time and costs."

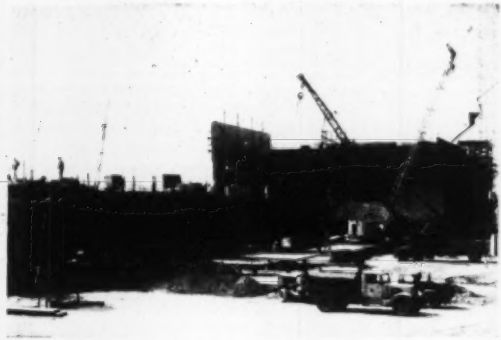
One more example of this fact: industrial structure or public building . . . apartment or heavy construction project—Douglas fir plywood forms do a *better* job, *faster*, *more economically*.

Douglas Fir

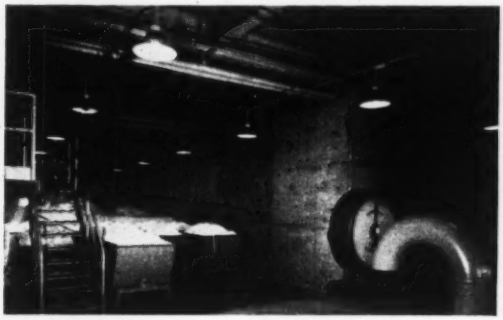
Plywood

AMERICA'S

Contractors Record 8 to 10 Re-Uses From Plywood Concrete Form Panels



Built-up plywood form-sections, 16′ long and 20′ high, were used to form the front walls of the three main buildings. Length of these form sections was determined by the 16-foot spacing of concrete pilasters. On the ends of the building (above, right) forms were 90′ to 120′ long. To relieve the monotony of the otherwise plain surfaces on the ends of the structure, wood molds were placed on the form face to create a striking fluted effect. Single pull hand winches spaced about every 15 feet were used to raise forms after each pour. Form sections were re-used to job completion—about 8 to 10 re-uses for the plywood, according to the contractors. View below shows interior of Lever plant. So smooth were plywood-formed interior walls and ceilings that those in processing units required no additional finishing.



Large, Light, Strong Real Wood Panels

For additional data on Douglas fir plywood for concrete form work, write (USA only): Douglas Fir Plywood Association, Tacoma 2, Washington. Of particular interest are two booklets: "Concrete Forms of Douglas Fir Plywood" and "Handling PlyForm".

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For Smooth, Fin-Free Concrete Surfaces...

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Concrete Form Panels

GENUINE DOUGLAS FIR PLYWOOD
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CONCRETE FORM PANEL
EXTERIOR TYPE GRADE B-B
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Smooth, fin-free surfaces . . . ease of handling . . . strength, rigidity, tightness . . . superior nail holding qualities . . . cost-cutting re-use factors —these are primary advantages of Plyform®. Highly moisture-resistant glues used in Ply-Form panels permit multiple re-use (as many as 10 to 15 are not unusual). For the greatest possible panel re-use, however, specify Exterior-type EXT-DFPA® Concrete Form grade of Douglas fir plywood—bonded with completely waterproof phenolic resin adhesive. For special architectural concrete, requiring the finest possible finish, the architect or contractor may specify Exterior-type or Interior-type Douglas fir plywood in grades having "A" face veneer—or one of the new plastic-surfaced panels.

Yours for $1

New Keuffel & Esser PlyForm calculator gives construction data for plywood forms, based on hourly rate of pour. Complete with leaflet, "Design Assumptions for New Keuffel & Esser Calculator." Send coupon now!

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TACOMA 2, WASHINGTON (Good in USA only)

Please send me ..... Keuffel & Esser Calculators. I enclose $1.00 each to cover costs.

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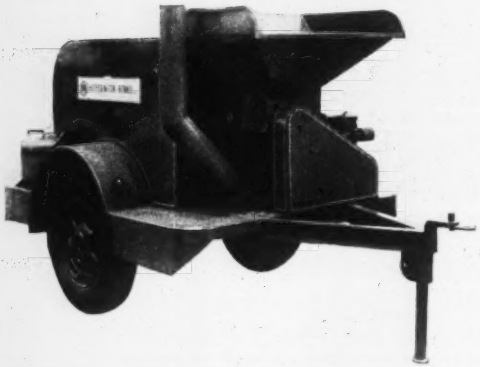
Hetherington & Berner Announces

The Moto-Patcher



—a mobile mixing unit designed for easier, more economical road and street maintenance.

for speedy, low-cost patching

● The Moto-Patcher delivers up to 10 tons per hour of *freshly* mixed material. The aggregate may either be shoveled into the hopper, or fed into the hopper by a small elevator (optional equipment). The mixed material is deposited on a pan of convenient height for easy shoveling, or it can be dropped directly onto the road surface. The 400 gal. tank assures an adequate supply of bitumen for uninterrupted production, making frequent stops unnecessary. The mixer, running through the bitumen tank, provides a drying action for the aggregate. If desirable, bitumen may be circulated when machine is not mixing.

Bulletin MP-51, giving specifications, flow diagram and complete information, will be sent on request.

HETHERINGTON & BERNER INC., 730 Kentucky Avenue, Indianapolis 7, Indiana

DRILLING CONTRACTORS

Diamond and Shot Core Borings
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Grout Holes and Pressure Grouting
Foundation Testing for Bridges, Dams and other Heavy Structures

Also

Manufacturers of Diamond and Shot Core Drills, Accessories & Equipment

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(Since 1915)

FOR • STEEL PLATE LINING • STEEL ENCASEMENT • BUILDING NEW WALLS • LINING WATER RESERVOIRS, TUNNELS AND SEWERS • PLATE LINING OF STEEL STACKS, BUNKERS, DUCTS • REPAIR OF DISINTEGRATED CONCRETE AND MASONRY • CANAL, DITCH AND DRAIN LINING

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New Products . . .

cinder or concrete blocks and masonry. Concrete blocks, for example, are laid up dry and wedged in the usual manner. The edges are then caulked with cheesecloth or used brattice cloth. The entire wall is then sprayed with a slow-drying adhesive compound and a single thickness of cheesecloth is pressed into the wet compound at several points. The solution is then sprayed on in the same manner as for a temporary stopping. The film is said to be so flexible that permanent stoppings sealed in this way do not develop fissures and cracks from ordinary roof and rib pressures. R. M. HOLLINGSHEAD CORPORATION, CAMDEN 2, NEW JERSEY.

New Product Briefs

Safety-Flag is an aid for all automobiles and trucks for daytime warnings during emergencies. Manufactured by **A. G. Busch & Co., Inc., 2632 N. Central Avenue, Chicago 39, Illinois,** the Safety-Flag kit consists of two red flags with wooden handles and two pointed steel spears tapered for staking in the ground or in cracks along a highway.

A four-post professional **drawing table** is announced by the **Kingsley Manufacturing Company, 748 East 82nd Street, Cleveland, Ohio.** Designed for use by draftsmen, engineers, architects, artists, and others requiring a large, substantial drawing surface, the table is made of sturdy hard maple with tops in a large range of sizes beginning at 36 x 60 in. A tracing drawer, 26 x 36 x 42 in. inside diameter is also available.

Snow-Rem is a new **liquid snow plow wax** for fast spray gun application on snow plow wings and moldboards. Manufactured by **Speco, Inc., 7308 Associate Ave., Cleveland, Ohio,** this is a companion product to the standard Snow-Rem which is applied by hand with a paint brush.

An improved type of MELT, **ice and snow-melting chemical pellets,** which are reputed to have 30 times the thawing capacity of salt, is announced by **The Chem Industrial Co., 1114 Hippodrome Building, Cleveland 14, Ohio.** These small pellets are said to be 99 percent active chemically, and produce a great exothermic action. The manufacturer claims that the product's snow-melting ability is approximately ten times that of flake calcium chloride. Obtainable in 25-lb. metal pails and 100-lb. fiber drums.

(*Continued on page 103*)

Only the Timken Company offers all 3 rock bit types and a complete rock bit engineering service!

WHATEVER your drilling conditions, there's a Timken® rock bit to meet them. And the Timken Rock Bit Engineering Service will help you pick it out! This service is the only *complete* rock bit engineering service offered by any rock bit manufacturer, because only the Timken Company makes *all 3* rock bit types:

1 MULTI-USE. Gives lowest cost per foot of hole when full increments of drill steel can be drilled and when control and reconditioning of bits are correct.

2 CARBIDE INSERT. For drilling extremely hard and abrasive ground, small holes, extra deep holes. Holes go down faster, bit reconditioning is simplified.

3 ONE-USE "SPIRALOCK". To use where reconditioning is not feasible. Gives lowest unit cost of the three. "Spiralock" union holds bit on dependably, permits easy removal.

Our rock bit engineers have been solving rock bit problems for the past 18 years. So whether you're looking for lower bit cost, lowest cost per foot of hole drilled, greatest possible drilling speed, or any other advantage, let us help you get it. The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".

FREE BOOKLET! *Shows full line of bits with detailed descriptions, plus other useful rock bit data. Write for your copy.*

TIMKEN ... *your best bet for the best bit ... for every job*

BRIXMENT

helps prevent efflorescence!

EFFLORESCENCE is caused by soluble salts which are present in almost all masonry materials. When reached by water, these salts dissolve and may be drawn, by evaporation, to the surface of the wall.

Brixment helps prevent efflorescence. The air-entraining and water-proofing agent in Brixment prevents water from saturating the mortar and dissolving the small amount of salts that it may contain. Moreover, Brixment mortar prevents water from percolating down through the wall, dissolving salts which may be in the brick, and carrying them to the surface.

LOUISVILLE CEMENT COMPANY, Incorporated, LOUISVILLE, KENTUCKY

New Product Briefs

Chain drive catalog—A new catalog, HD-51, assists in chain drive selection. It has been compiled to offer a simple, quick means of determining interchangeability of various makes of roller and conveyor chains. Additional information is supplied which is of value in determining the proper application of chain drives as a power transmission or conveying medium. THE WHITNEY CHAIN COMPANY, 237 HAMILTON STREET, HARTFORD 2, CONN.

Kennedy products—This is a highly illustrated 88-page booklet with complete information on the various machines made by the company, including classifiers, conveyors, feeders, gate, grizzleys, screens, rolls, motors, and all types of crushers.

Capacities, product control, sieving tests, are included. The booklet explains how all iron, steel, zinc and babbitt metal are subjected to a chemical and physical test to insure the highest degree of efficiency. All parts have high interchangeability. The company offers estimates on costs and prices for reconstructing old plants or replacing old machinery with modern equipment. KENNEDY-VAN SAUN MANUFACTURING & ENGINEERING CORP., 2 PARK AVENUE, NEW YORK 16, N. Y.

"At Your Service—Leece-Neville"—is the title of a new 24-page brochure recently published by the company. They are manufacturers of electrical equipment for diesel, gas, and gasoline engines. The brochure outlines the part played by the company as a pioneer in this field for over 40 years. Pictures show the company's production, assembly, testing and engineering facilities. The balance of the booklet shows typical equipment made by the company for buses, trucks, industrial engines, off-highway equipment, passenger cars, rail, marine and aircraft. Included are ac-dc alternator systems, generators, starting motors, hand and magnetic switches, and voltage regulators. THE LEECE-NEVILLE COMPANY, CLEVELAND 14, OHIO.

New rear-dump Euclids—are described in a 16-page catalog in two colors containing specifications of the engines, transmissions, drive axle, frame, body, etc. Listed as Form No. 121, it illustrates Model 45TD and Model 46TD. Each has a 10-speed transmission and is available with standard or quarry body. A heated body which speeds the dumping operation during cold weather is available as optional equipment. THE EUCLID ROAD MACHINERY COMPANY, CLEVELAND 17, OHIO.

ADVERTISERS IN THIS ISSUE

Acker Drill Co. 71
Adams Mfg. Co., J. D. 93
American Int'l Underwriters 73
American Manganese Steel Div., American Brake Shoe Co. 16
American Tubular Elevator Co. 61

Bauman, Arthur C. 66
Belmont Iron Works 56
Berger & Sons, Inc., C. L. 2
Bethlehem Steel Co. 20
Blaw Knox Div., Blaw Knox Co. 95
Borden Metal Products 12
Boston Woven Hose & Rubber Co. 38
British Ropeway Engineering Co. 48
Builders-Providence, Inc. 47
Byers Co., A. M. ..... 2nd Cover

Cement Gun Company 48
Chapman Valve & Mfg. Co. 41
Chicago Pneumatic Tool Co. 46
Cities Service Companies 15
Complete Machinery & Equipment Co. .. 66

Douglas Fir Plywood Assn. 98, 99
Dow Chemical Co. 11
Dresser Mfg. Div. Dresser Industries ... 37

Economy Forms Corp. 68
Electric Tamper & Equipment Co. 60
Eppinger & Russell Co. 56
Euclid Road Machinery 7

Fairbanks-Morse Co. 63
Foster Co., L. B. 14
Foundation Equip. Corp. 75
Four Wheel Drive Auto Co. 97
Frederick Iron & Steel, Inc. 76

Goodyear Tire & Rubber Co. 1
Griffin Wellpoint Corporation 77
Gunite Concrete & Construction Co. 100
Gunite Construction Company 77

Hetherington & Berner, Inc. 100

Inland Steel Co. 18
Irving Subway Grating Co. 78
Irvington Form & Tank Corp. 71

Joy Mfg. Co. 59

Koppers Co., Wood Preserving Div. 63

Lamson & Sessions Co. 9
Lee & Son, W. W. 74
LeRoi Company 52, 53
Lincoln Electric Corp. 69
Lock Joint Pipe Co. 94
Louisville Cement Co. 102

MacArthur Concrete Pile Co. 47
Mamaux & Son, A. 76
Master Builders Co. ..... 3rd Cover
McGraw-Hill Book Co. 12, 50
Mesker Steel Corp., George L. 58
Minneapolis-Moline 54
Municipal Service Co. 59
Murphy Diesel Corp. 5

Naylor Pipe Co. 8
Nelson Stud Welding Div., Morton Gregory Corp. 96
Northwest Engineering Company 3

Ohio Locomotive Crane Co. 72
Onan & Sons, Inc., D. W. 95
Owens-Illinois Glass Co. 13

Pennsylvania Drilling Co. 78
Pittsburgh Corning Corp. 49
Pittsburgh-Des Moines Steel Co. 72
Plasteel Products Co. 75
Portland Cement Assn. 10
Pressure Concrete Company 72

Raymond Concrete Pile Co. 61
Ryerson & Sons, Inc., Jos. T. 74

Sauerman Bros., Inc. 58
Silent Glow Oil Burner Corp. 4
Sparling Meter Co. 68
Sprague & Henwood, Inc. 100
Stang Corp., John W. 62

Texas Company ..... 4th Cover
Timber Engineering Co. 67
Timken Roller Bearing Co. 101
Tinney Drilling Company 76
Torrington Co., Bantam Bearings Div. .. 65
Trailer Village, Inc. 78
Tubing Appliance Co. 60

U. S. Pipe & Foundry Co. 55
Universal Atlas Cement Co. 22
Universal Concrete Pipe Co. 73
Universal Sewer Pipe Corp. 6

Vulcan Iron Works 45

Warner & Swasey Co. 42
Williams Co., J. H. 77
Wood Co., R. D. 62
Wood Mfg. Co. 56

Professional Services 91

SEARCHLIGHT SECTION
(Classified Advertising)

Employment
Positions Vacant 82, 83, 84
Positions Wanted 84
Selling Opportunities Wanted 84
Employment Services 82

Educational
Schools 82

Notices
Proposal 79-82

Equipment
(Used or Surplus New)
For Rent 88
For Sale 84-91
Piling 90
Pipe 90
Rail 91
Surveying Instruments 84

Wanted
Equipment 88

ADVERTISERS INDEX 84

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Progress report: Power projects doing fine

Nearly 13 years ago—on Dec. 1, 1938, to be exact—the two generators of the Platte Valley Public Power and Irrigation District south of North Platte, Nebraska, began to put their power on the line in a steady flow.

It was the culmination of four years of construction, legal battles and skepticism, fought out in the heat, the stifling dust of one of the worst periods of the mid-west's "dust bowl" era. Many an old-time resident had never believed the engineers would even get so far as to make power, few who had observed the vagaries of the meandering Platte River believed there would ever be enough water for the irrigation planned.

• **Doing fine, thank you**—But the engineers and the planners were right and the skeptics were wrong.

Some other things have entered into the picture—like consolidation of power lines with the state's two other hydro projects, and a series of unusually good years of rain—but here are the facts:

Since that day in December, 1938, the turbines at North Platte's hydro station have never ceased to run. Once the reservoirs were filled, (more than 2,000,000 acre-ft is now in storage, including that behind huge Kingsley Dam) there has never been a lack of water for power or irrigation.

Today, the three projects—now units of the Nebraska Public Power System—are turning in a net revenue of about $8,000,000 a year; marketing a total of 278,000 kw of power from eight hydro and three active steam generating stations (five are on standby status), directly irrigating more than 140,000 acres of rich farmland, and indirectly thousands more (because cheap electricity has brought pump irrigation). More than 350 towns get power from this source.

The system is delivering power to "wholesale" customers at 9 mills per kwh, and its customers, like the City of North Platte (pop. 18,000) are selling it to consumers at 2¾ cents a kwh. That has resulted in some encouraging financial advances for the small Nebraska towns and cities. North Platte, for instance, strained its economy near the breaking point in 1940 to purchase the local properties of the Northwestern Public Service Corp. for $1,800,000—and its city council came in for hot criticism from taxpayers.

But on Sept. 5, 1951, the city's Municipal Light and Power agency took full-page advertisements in local newspapers to announce that the entire 1940 indebtedness had been paid off, that local electric power rates would come down by a total of $100,000 a year.

• **Engineering stands up**—The engineers who directed the building of the Platte Valley's 50 miles of canals, snaking through the forbidding, dry hills of loess soil that Nebraskans call "sandhills" built well.

Since the first power started to go out, the project has been shut down only once—for 10 days—when the siphon at Paxton had to be cleaned out.

But the engineers who are running the job now attest that there has been no major trouble, there is more water in the canals now than they were intended for (because of the subsequent construction of Kingsley Dam upstream from the Platte Valley's own diversion dam at Keystone on the North Platte River), the reservoirs have held well enough, the power plant has needed no changes.

It hasn't been perfect, of course. For one thing, the capacity of the outlet canal (from the Sutherland reservoir to the regulating reservoir south of North Platte) has been increased from an actual 1,250 sec-ft capacity to 1,650 sec-ft—by the addition of rock rip-rap to permit greater water velocity.

The engineering staff is now considering means of closing in the big "open cut" near Paxton, where the canal crosses a ridge of sandhills separating the North and South Platte rivers, and drops under the south river in a siphon. This cut, roughly 7,000 ft long and 160 ft deep at its deepest, was made through layers of loess, gravel and soft Ogallala stone—and its slopes (originally 1½ to 1) have been sluffing steadily. Spilling into the canal, the gravel shoots through the mile-long siphon with the wearing effect of sandpaper on the concrete invert, and piles up at the outlet of the siphon, posing a constant removal problem.

Engineers are now considering the possibility of building a concrete pipe to carry the water through the cut, and then allowing the banks to sluff over the pipe and cover it in.

Sutherland Reservoir, originally intended as the main storage basin for the project, has never been filled to its capacity, since it hasn't become watertight. But it's slowly sealing itself, and now stores about 75,000 acre-ft.

One other change present-day engineers would make, if they had to do it again: They'd cut the canals straighter.

• **Some history**—Nebraskans owe their fortunate power situation to the foresight of a number of local citizens (including the late Senator George Norris of nearby McCook) and to circumstances that paradoxically included the drought and now include abundant rain.

Despite the desperate heat and dryness of the years from 1933 to 1939, they couldn't have picked a better time to get the work done. Originally scheduled to cost $7,000,000, the Platte Valley project finally cost $12,675,000 (including a new diversion dam on the South Platte near Paxton)—which seemed a fabulous sum then, but is small by present values. Excavation cost as little as six cents a yard; skilled men were glad to work for 35 cents an hour; canal lining cost $11 a cubic yard; mass concrete $9.

What the farmers and ranchers wanted then was irrigation. What government engineers and the private consultants insisted on was power—to help pay off the cost of the works for irrigation.

What Nebraska got was both. While the Platte Valley project got under way in the central and western part of the state, another project—on the Loup River near Columbus (to the east) was building. And a few years later, the Tri-County system, headquartering in mid-state at Hastings, started.

Finally, the three districts were put together to form the power system. In April, 1949, directors of the Tri-County district, deciding they were in the irrigation, not the power business, pulled out of the state network—leaving their hydro plants to be operated by the system, and the power to be marketed by it.

Long-Life *Floors* and *Equipment Grout* In United States Steel Company's Homestead Works with...

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Where paving meets one of its severest tests

Boston Post Road

Above photographs show resilient, heavy-duty Texaco Asphaltic Concrete being laid on the Boston Post Road in the Village of Mamaroneck, N. Y. View of the completed pavement at the right. Contractors: Peckham Road Corporation, White Plains, N.Y. and Cold Mix, Inc., Port Chester, N.Y.

Boston Post Road traffic in Old Greenwich, Conn. Also served by Texaco Asphaltic Concrete paving, which was laid in 1948.

Main truck route between New York City and Boston, the Boston Post Road is one of America's most important highways. The pavement constructed on this road must stand up under the heaviest kind of impact day after day, year in and year out.

Resilient, heavy-duty Texaco Asphaltic Concrete, whose rugged durability has been demonstrated on other sections of the Post Road, was used this year on a two mile section of the route in the village of Mamaroneck, N. Y.

Wherever heavy traffic must be served—principal city streets, truck highways, bridges or vehicular tunnels—heavy-duty Texaco Asphaltic Concrete is a sound choice. Its past performance on the Boston Post Road, the Delaware River Bridge at Philadelphia and many sections of U. S. Route 1, for example, furnish convincing proof of its ability not only to stand up under punishing impact, but to do so at a relatively low annual cost.

Helpful information on Texaco Asphaltic Concrete, as well as other plant-mixed types of asphalt construction, is provided in a booklet entitled, "Texaco Asphalt Paving — Plant-mixed Types." Our nearest office will send you a copy without cost or obligation to you.

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